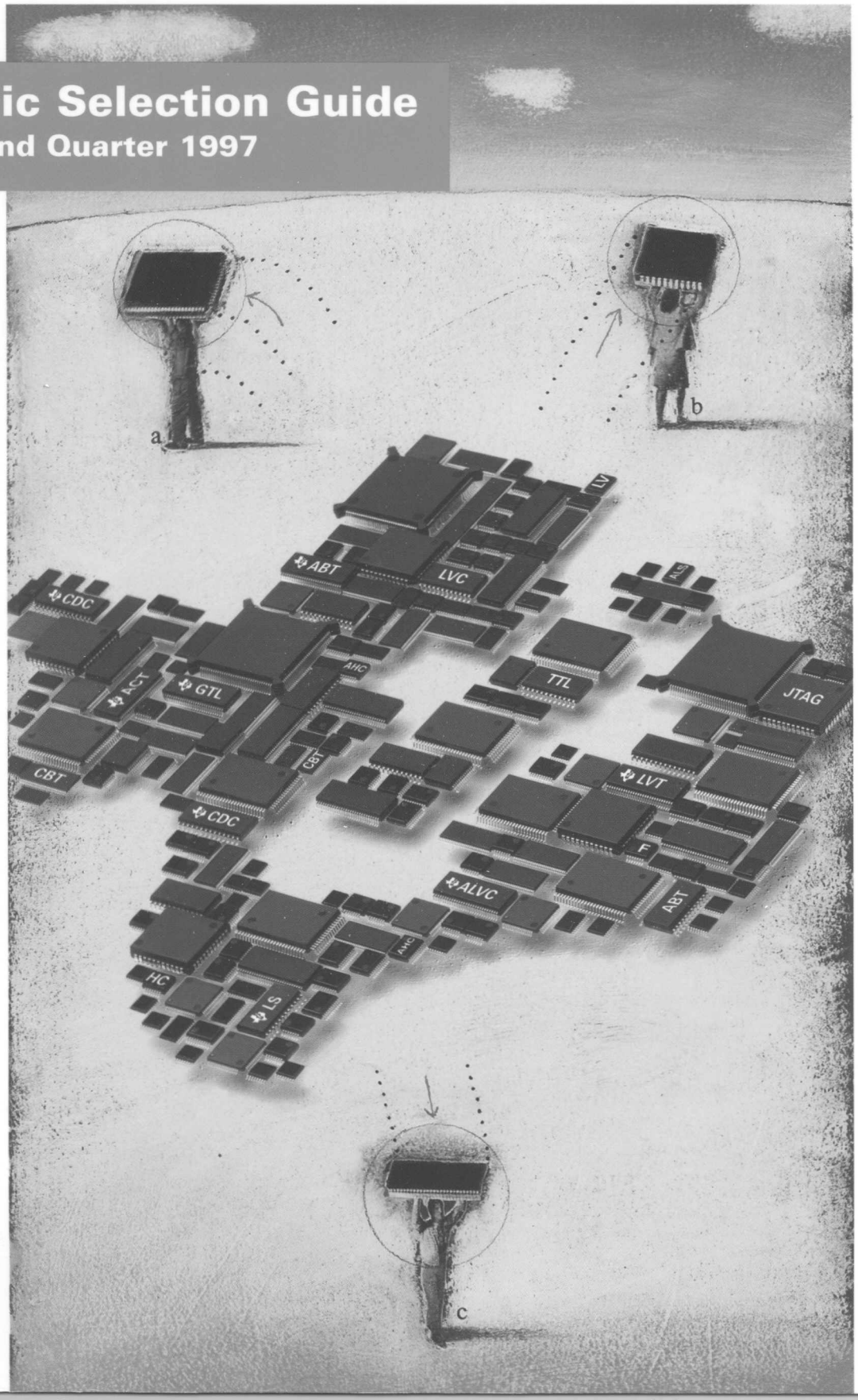
TEXAS INSTRUMENTS

Logic Selection Guide

Second Quarter 1997



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LOGIC SELECTION GUIDE

SECOND QUARTER 1997

TEXAS INSTRUMENTS

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CONTACTS/INFORMATION

Advanced System Logic (ASL)
Advanced Bus Interface (ABI)

PRODUCT INFORMATION CENTER
(972) 644-5580

LITERATURE REQUESTS
(800) 477-8924

TI HOME PAGE
http://www.ti.com

TI ASL HOME PAGE
http://www.ti.com/sc/docs/asl/home.htm

TI DATA SHEETS
http://www.ti.com/sc/docs/psheets/plds.htm

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Texas Instruments (TI) offers a full spectrum of logic functions in a variety of technologies. TI's process technologies include CMOS, bipolar, and BiCMOS. These state-of-the-art process technologies offer the logic performance and features required in today's system designs. TI's product offerings include the following:

- ABT, ABTE, AC, ACT, AHC, AHCT, ALB, ALS, ALVC, AS
- BCT, BTA, CBT, F, FB, FIFO, GTL, HC, HCT
- JTAG, LS, LV, LVC, LVT, S, SSTL, TTL

TI has addressed many important design issues, including testability, memory driving, bus termination, low skew requirements, and low-impedance line driving with specialized, advanced logic devices that improve overall system performance.

TI offers a wide variety of packaging options, including advanced packaging such as the plastic thin quad flat package (TQFP), shrink small-outline package (SSOP), thin shrink small-outline package (TSSOP), and thin very small-outline package (TVSOP). All of these deliver high performance and allow the designer to double input/output in the same board area or to reduce the board-area requirement by half.

For further information on logic families, refer to the list of current Advanced Logic publications provided in this preface. For an overview of TI's logic families, see Section 1. This selection guide lists the functions that TI offers in each logic family, along with the current schedule and applicable literature number. The literature number identifies the current data sheet, which can be ordered through your local sales office or TI authorized distributor (refer to the back cover of this guide). Many TI data sheets are available on the World-Wide Web at http://www.ti.com.

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TI ADVANCED LOGIC PUBLICATIONS

Listed below is the current collection of TI logic technical documentation. These documents can be ordered through a TI representative or authorized distributor by referencing the literature number.

DOCUMENT	LITERATURE NUMBER
AC/ACT CMOS Logic Data Book (1997)	SCAD001D
AC/ACT Logic Product Information (1996)	SCAA027
Advanced BiCMOS Technology Data Book (1994)	SCBD002B
Advanced Bus-Interface SPICE I/O Models Data Book (1995)	SCBD004A
Advanced CMOS Logic Data Book (1993)	SCAD001C
AHC/AHCT, HC/HCT, and LV CMOS Logic Data Book (1996)	SCLD004
ALS/AS Logic Data Book (1995)	SDAD001C
BCT BiCMOS Bus-Interface Logic Data Book (1994)	SCBD001B
Boundary-Scan Logic IEEE Std 1149.1 (JTAG) Data Book (1997)	SCTD002A
CBT Bus Switches Crossbar Technology Data Book (1996)	SCDD001A
CDC Clock-Distribution Circuits Data Book (1996)	SCAD004A
F Logic Data Book (1994)	SDFD001B
GTL, BTL, and ETL Logic Data Book (1997)	SCED004
High-Performance FIFO Memories Data Book (1996)	SCAD003C
High-Performance FIFO Memories Designer's Handbook (1996)	SCAA012A
High-Speed Memory Interface Logic Data Book (1997)	SCED001
IEEE Std 1149.1 (JTAG) Testability Primer (1997)	SSYA002C
Low-Voltage Logic Data Book (1996)	SCBD003B
LVC Designer's Guide (1996)	SCBA010

Example:

SN	74	ALVC	H	16	2	244		DGG	R
1	2	3	4	5	6	7	8	9	10

1 Standard Prefix

Example: SNJ – Conforms to MIL-PRF-38535 (QML)

2 Military (54) or Commercial (74)

3 Family

Example: Blank – Transistor-Transistor Logic
ABT – Advanced BiCMOS Technology
ABTE – Advanced BiCMOS Technology/ Enhanced Transceiver Logic
AC/ACT – Advanced CMOS Logic
AHC/AHCT – Advanced High-Speed CMOS Logic
ALS – Advanced Low-Power Schottky Logic
AS – Advanced Schottky Logic
ALVC – Advanced Low-Voltage CMOS Technology
BCT – BiCMOS Bus-Interface Technology
CBT – Crossbar Technology
CDC – Clock-Distribution Circuits
F – F Logic
FB – Backplane Transceiver Logic/Futurebus+
GTL – Gunning-Transceiver Logic
HC/HCT – High-Speed CMOS Logic
LS – Low-Power Schottky Logic
LV – Low-Voltage HCMOS Technology
LVC – Low-Voltage CMOS Technology
LVT – Low-Voltage BiCMOS Technology
S – Schottky Logic
SSTL – Series-Stub Terminated Logic

4 Special Features

Example: Blank = No Special Features
D – Level-Shifting Diode (CBTD)
H – Bus Hold (ALVCH)
R – Damping Resistor on Inputs/Outputs (LVCR)
S – Schottky Clamping Diode (CBTS)
U – Unbuffered Output (AHCU)

5 Bit Width

Example: Blank = Gates, MSI, and Octals
1G – MicroGate (Single Gate)
8 – Octal IEEE 1149.1 (JTAG)
16 – Widebus™ (16, 18, and 20 Bit)
18 – Widebus™ IEEE 1149.1 (JTAG)
32 – Widebus+™ (32 and 36 Bit)

6 Options

Example: Blank = No Options
2 – Series-Damping Resistor on Outputs
4 – Level Shifter
25 – 25-Ω Line Driver

7 Function

Example: 244 – Noninverting Octal Buffer/Driver
374 – Octal D-Type Flip-Flop
573 – D-Type Transparent Latch
640 – Inverting Octal Transceiver

8 Device Revision

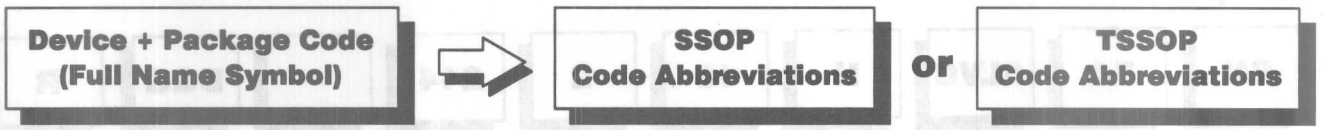
Example: Blank = No Revision
Letter Designator A–Z

9 Packages

Example: D, DW – Small-Outline Integrated Circuit (SOIC)
DB, DL – Shrink Small-Outline Package (SSOP)
DBB, DGV – Thin Very Small-Outline Package (TVSOP)
DBV – Small-Outline Transistor Package
DGG, PW – Thin Shrink Small-Outline Package (TSSOP)
FK – Leadless Ceramic Chip Carrier
FN – Plastic Leaded Chip Carrier
GB – Ceramic Pin Grid Array
HFP, HS, HT, HV – Ceramic Quad Flat Package
J, JT – Ceramic Dual-In-Line Package
N, NT – Plastic Dual-In-Line Package (DIP)
PAG, PAH, PCA, PCB, PM, PN, PZ – Plastic Thin Quad Flat Package
PH, PQ, RC – Plastic Quad Flat Package
W, WA, WD – Ceramic Flat Package

10 Tape and Reel

Example: LE – Left Embossed (Required for DB and PW Packages)
R – Standard (Required for DGG, DBB, DGV, and DBV; Optional for D, DL, and DW Packages)



Device Name →	Name Rule SSOP	or Name Rule TSSOP
74AC***	AC***	AC***
74AC11***	AC11***	AE***
74ACT***	ACT***	AD***
74ACT1***	ACT1***	AU***
74ACT11***	ACT11***	AT***
CDC***	CDC***	CK***
SN64BCT***	DCT***	DT***
SN64BCT2***	DCT2***	DA***
SN64BCT25***	DCT25***	DC***
SN64BCT29***	DCT29***	DD***
SN74ABT***	ABT***	AB***
SN74ABT***–S	ABT***–S	AB***–S
SN74ABT16***	ABT16***	AH***
SN74ABT18***	ABT18***	AJ***
SN74ABT2***	ABT2***	AA***
SN74ABT5***	ABT5***	AF***
SN74ABT8***	ABT8***	AG***
SN74ABTH***	ABTH***	AK***
SN74ABTH16***	ABTH16***	AM***
SN74ABTH18***	ABTH18***	AL***
SN74AHC***	AHC***	HA***
SN74AHCT***	AHCT***	HB***
SN74AHCU***	AHCU***	HD***
SN74ALS***	ALS***	G***
SN74ALVCH16***	ALVCH16***	VH***
SN74ALVCHG16***	ALVCHG16***	VG***
SN74AS***	74AS***	AS***
SN74BCT***	BCT***	BT***
SN74BCT11***	BCT11***	BB***
SN74BCT2***	BCT2***	BA***
SN74BCT25***	BCT25***	BC***
SN74BCT29***	BCT29***	BD***
SN74BCT8***	BCT8***	BG***
SN74CBT***	CBT***	CT***
SN74CBT16***	CBT16***	CY***

Device Name →	Name Rule SSOP	or Name Rule TSSOP
SN74CBT3***	CBT3***	CU***
SN74CBT6***	CBT6***	CV***
SN74CBTD***	CBTD***	CD***
SN74CBTD3***	CBTD3***	CC***
SN74CBTS***	CBTS***	CS***
SN74CBTS3***	CBTS3***	CR***
SN74F***	74F***	F***
SN74H***	74H***	H***
SN74HC***	HC***	HC***
SN74HCT***	HCT***	HT***
SN74HCU***	HCU***	(U)***
SN74HCU***	HCU***	HU***
SN74LS***	74LS***	LS***
SN74LV***	74LV***	LV***
SN74LVC***	LVC***	LC***
SN74LVC16***	LVC16***	LD***
SN74LVC2***	LVC2***	LE***
SN74LVC4***	LVC4***	LJ***
SN74LVCC3***	LVCC3***	LH***
SN74LVCC4***	LVCC4***	LG***
SN74LVCH***	LVCH***	LCH***
SN74LVCH16***	LVCH16***	LDH***
SN74LVCR2***	LVCR2***	LER***
SN74LVCU***	LVCU***	LCU***
SN74LVT***	LVT***	LX***
SN74LVT***–S	LVT**–S*	LX***–S
SN74LVT18***	LVT18***	
SN74LVT2***	LVT2***	LY***
SN74LVTH***	LVTH***	LXH***
SN74LVTR***	LVTR***	LXR***
SN74LVTT***	LVTT***	LXT***
SN74LVTZ***	LVTZ***	LXZ***
SN74LVU***	LVU***	LU***
SN74S***	74S***	S***

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LOGIC OVERVIEW

SECTION 1
LOGIC OVERVIEW

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Advanced Bus Interface & Standard Logic

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Advanced System Logic Products

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Advanced Bus Interface (ABI)
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Product Information Center: **972/644-5580**

ASL Fax: **903/868-5980**

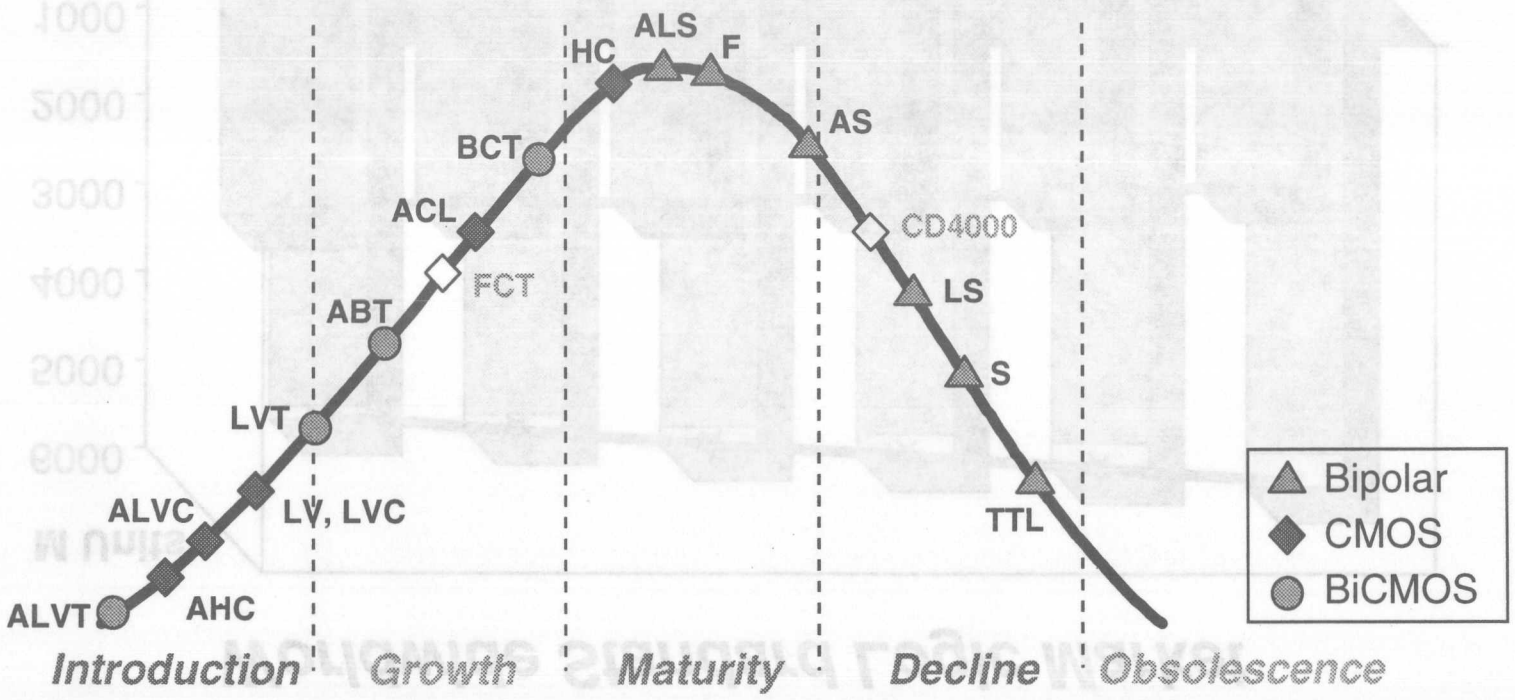
TI Home Page: **http://www.ti.com**

ASL Home Page: **http://www.ti.com/sc/docs/asl/home.htm**

Datasheets: **http://www.ti.com/sc/docs/psheets/pids.htm**

Texas Instruments
P.O. Box 84, M/S 835
Sherman, TX 75091

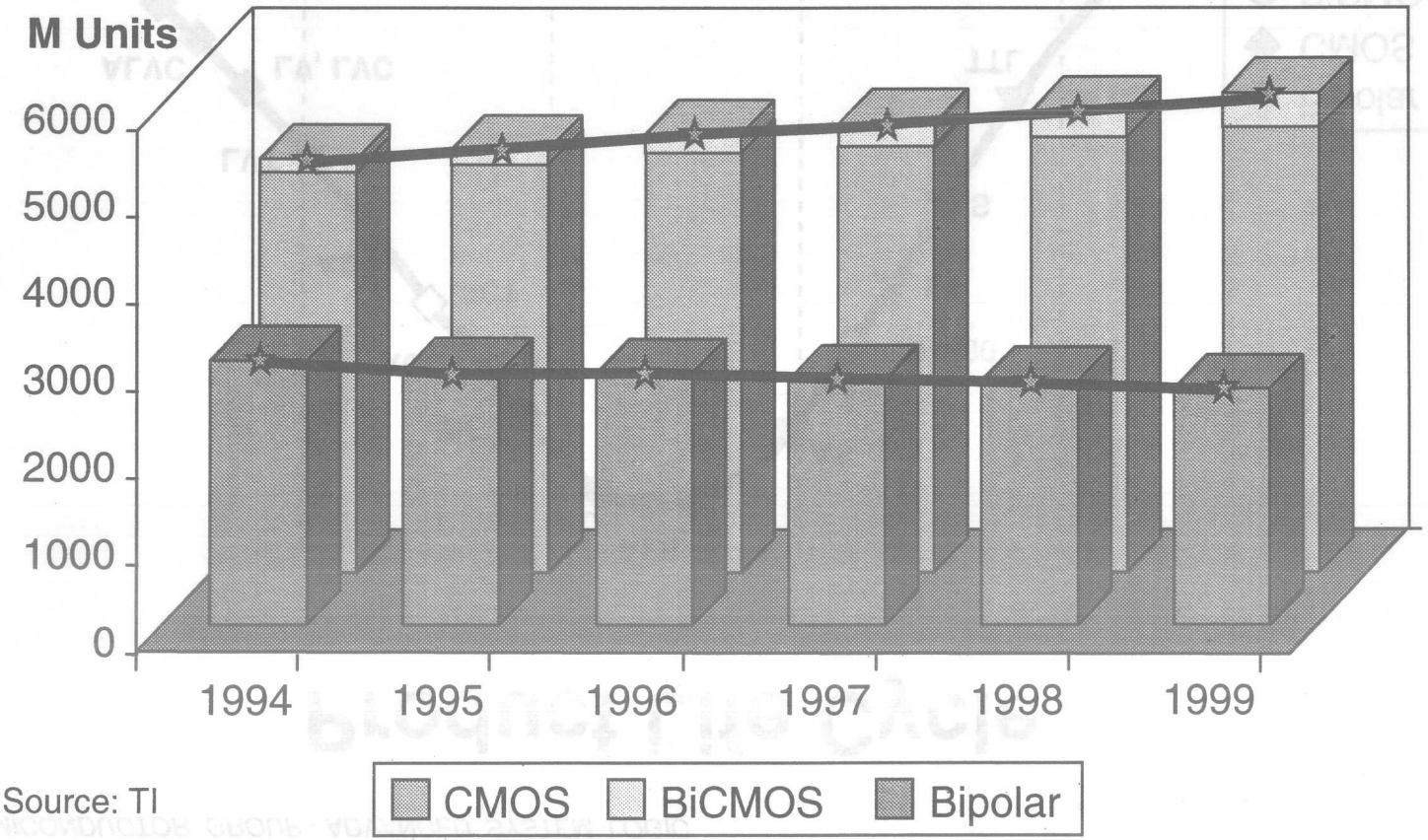
Product Life Cycle



- TI remains committed to be the last supplier in the older families.
- Investment levels for new products are at an all-time high, while end-equipment requirements are accelerating new product introduction.

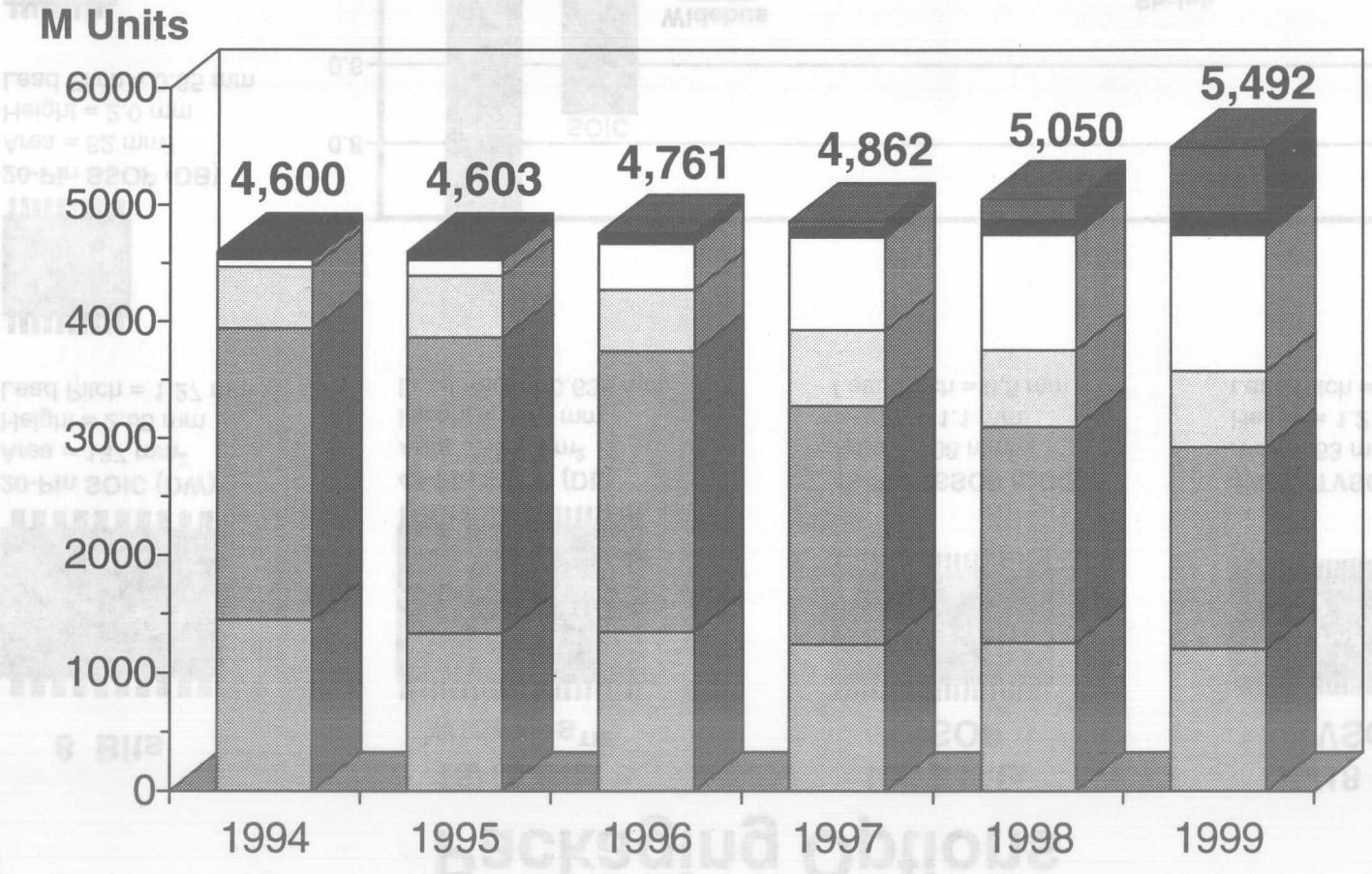
CMOS Is Growing, Bipolar Is Shrinking

Worldwide Standard Logic Market



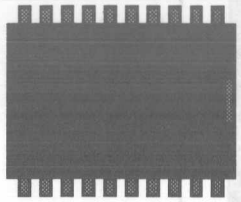
Source: TI

Worldwide CMOS Logic Market

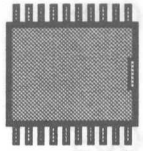


Packaging Options

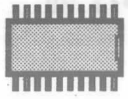
8 Bits



20-Pin SOIC (DW)
Area = 137 mm^2
Height = 2.65 mm
Lead Pitch = 1.27 mm



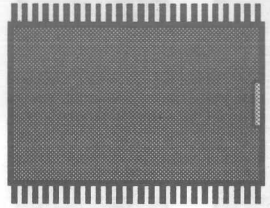
20-Pin SSOP (DB)
Area = 62 mm^2
Height = 2.0 mm
Lead Pitch = 0.65 mm



20-Pin TSSOP (PW)
Area = 46 mm^2
Height = 1.1 mm
Lead Pitch = 0.65 mm

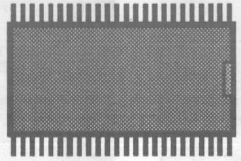
(TI package designators)

16/18 Bits Widebus™



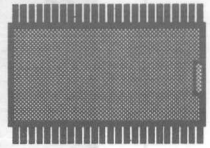
48-Pin SSOP (DL)
Area = 171 mm^2
Height = 2.74 mm
Lead Pitch = 0.635 mm

16/18 Bits TSSOP

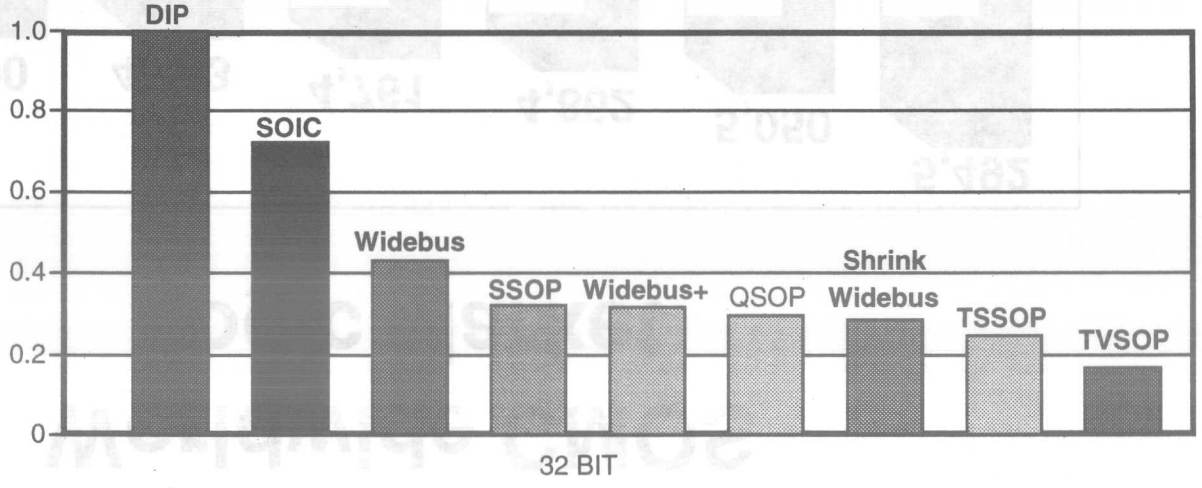


48-Pin TSSOP (DGG)
Area = 108 mm^2
Height = 1.1 mm
Lead Pitch = 0.5 mm

16/18 Bits TVSOP



48-Pin TVSOP (DGV)
Area = 63 mm^2
Height = 1.2 mm
Lead Pitch = 0.4 mm



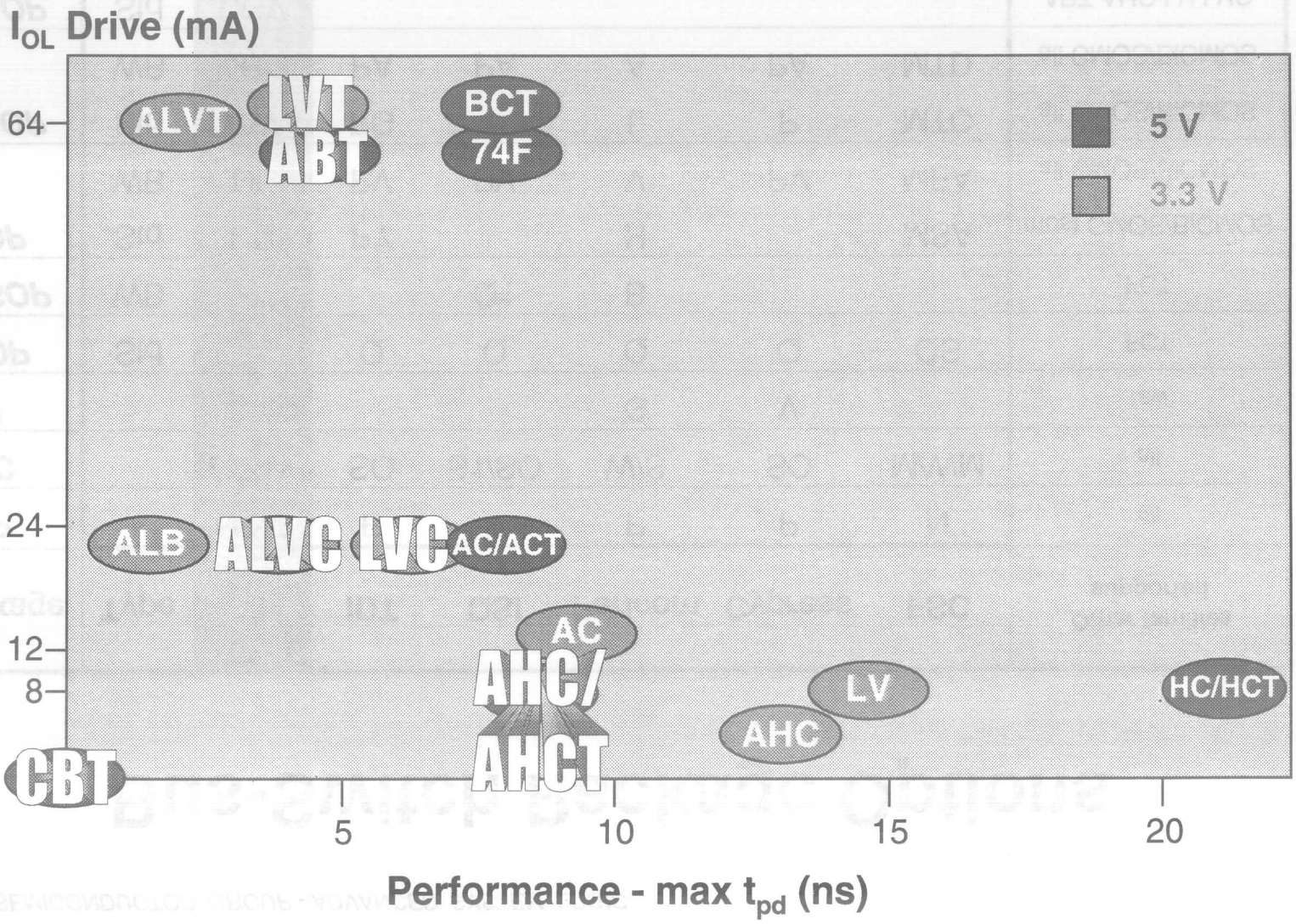
Bold indicates TI TTL/CMOS logic packages.

Widebus, Widebus+, and Shrink Widebus are trademarks of Texas Instruments Incorporated.

Bus-Switch Package Options

Package	Type	TI	IDT	QSI	Pericom	Cypress	FSC	Other families supported
PDIP		N/NT	P	P	P	P	N	all
SOIC		D/DW	SO	S1/SO	W/S	SO	M/WM	all
SOJ					G	V		few
QSOP	Std		Q	Q	Q	Q	QS	FCT
QVSOP	WB			Q1	B			FCT
SSOP	Std	DB	PY		H		MSA	most CMOS/BiCMOS
	WB	DL	PV	PV	V	PV	MEA	all CMOS/BiCMOS
TSSOP	Std	PW	PG		L	P	MTC	all CMOS/BiCMOS
	WB	DGG	PA	PA	A	PA	MTD	all CMOS/BiCMOS
TVSOP	Std	DGV						ABT,AHC,LV,LVC
	WB	DGV	tbd					ABT,AHC,LVC,ALVC

Family Positioning



Advanced High-Speed CMOS - AHC/AHCT

Circuit Features

Gates, Flip-Flops, and Bus Functions
Available in CMOS & TTL Compatible Functions
Low Noise
High Noise Immunity
2.0V to 5.5V Supply Voltage

Advantages

Three Times Faster Than HC
Similar Noise Performance to HC
Similar Pricing to HC
Marketing & Applications Support
Internal & External 2nd Sources
Drop-in Replaceable to VHC
Broad Product Portfolio
Performance/Price

Performance

'245 { 5.5 ns typ t_{pd}
'245 { 8.5 ns max t_{pd}

8 mA Drive 5V
4 mA Drive 3.3V

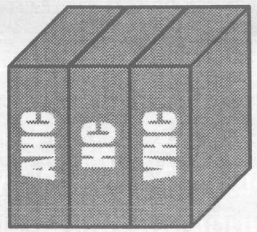
Packaging

PDIP
SOIC
SSOP
TSSOP
TVSOP*

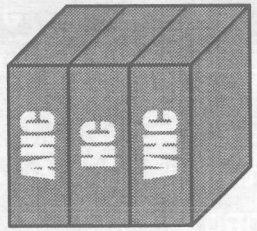
*Planned

Key Comparisons

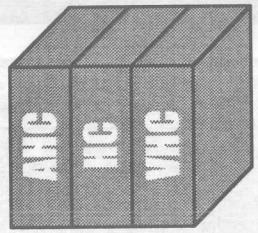
AHC/HC/VHC



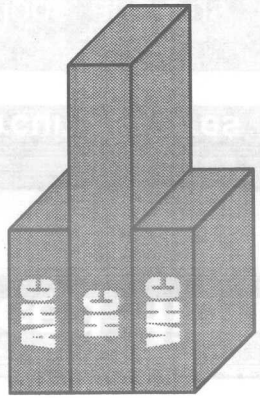
Ground Bounce (V_{OLP})



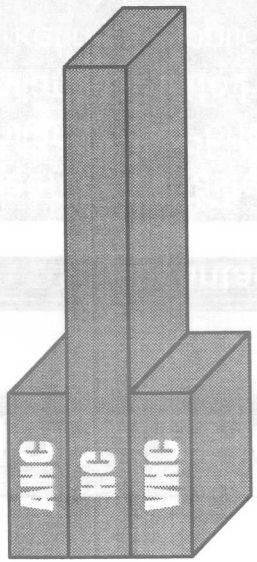
Drive - I_{OL}



Dynamic Power Consumption



Static Power Consumption

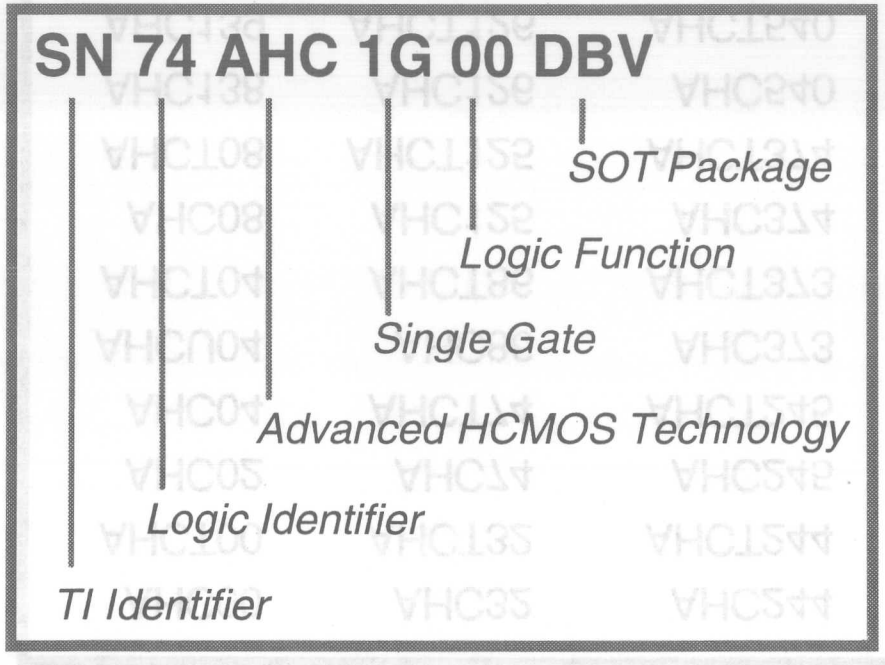


Propagation Delay

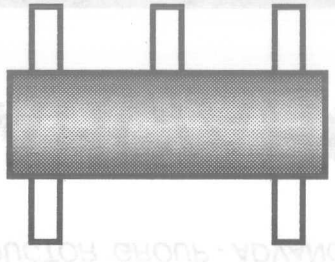
AHC/AHCT Product Offerings

Released				Planned
AHC00	AHC32	AHC244	AHC573	AHCT138
AHCT00	AHCT32	AHCT244	AHCT573	AHCT139
AHC02	AHC74	AHC245	AHC574	AHC157
AHC04	AHCT74	AHCT245	AHCT574	AHCT157
AHCU04	AHC86	AHC373		AHC158
AHCT04	AHCT86	AHCT373		AHCT158
AHC08	AHC125	AHC374		AHC257
AHCT08	AHCT125	AHCT374		AHCT257
AHC138	AHC126	AHC540		AHC258
AHC139	AHCT126	AHCT540		AHCT258
AHC14	AHC240	AHC541		AHCT02
AHCT14	AHCT240	AHCT541		

AHC/AHCT MicroGates



- Simplifies circuit routing
- ASIC modification
- 3.5 ns typ propagation delay
- +/-8mA output drive
- 20uA static current
- CMOS (AHC) and TTL (AHCT) versions
- Compatible with Toshiba's TC7SH/SHTxx series
- Volume production: now



Cross-Reference (examples)

Texas Instruments	Toshiba
SN74AHC1G00DBV	TC7SH00F
SN74AHCT1G00DBV	TC7SHT00F
SN74AHC1GU04DBV	TC7SHU04F

AHC/AHCT MicroGate Product Offerings

Released	Planned
AHC1G00	AHCT1G04
AHCT1G00	AHC1G14
AHC1G04	AHCT1G14
AHC1GU04	AHC1G86
AHC1G08	AHCT1G86
AHCT1G08	
AHC1G32	
AHCT1G32	

Advanced BiCMOS Technology - ABT

Circuit Features

- 0.8µ BiCMOS Technology
- Power-Up 3-State
- Power-On-Demand (I_{CCL})*
- Bus Hold ($I_{I(HOLD)}$)*
- Live Insertion (I_{OFF})
- Industrial Temp (-40 to 85°C)
- Damping Resistor Option
- Reduced V_{OLP}

* Selected functions

Advantages

- Low Power CMOS
- High Drive Bipolar Outputs
- Marketing & Applications Support
- SPICE Models
- Internal & External 2nd Sources
- Broad Product Portfolio
- Performance/Price

Performance

'245A - 3.9 ns
'16245A - 4.2 ns
} max t_{pd}

Packaging

- DIP
- SOIC
- SSOP
- TSSOP
- Widebus™
- Shrink Widebus™
- TQFP

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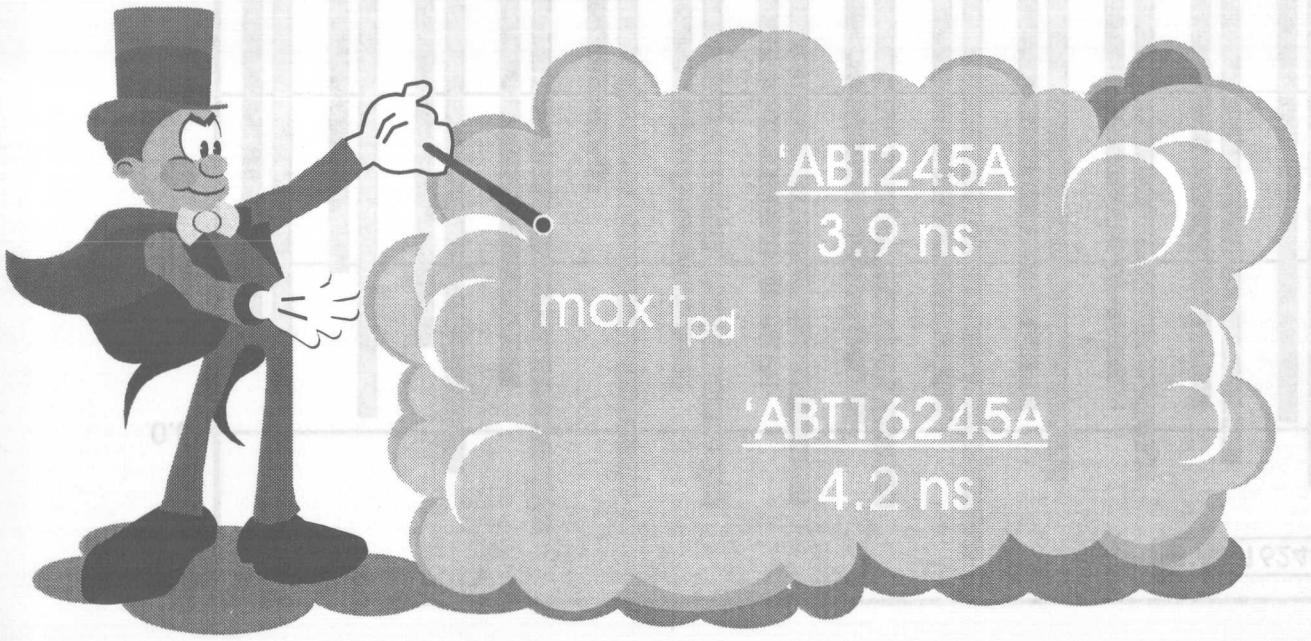
ABT Is Fast!



FCT245

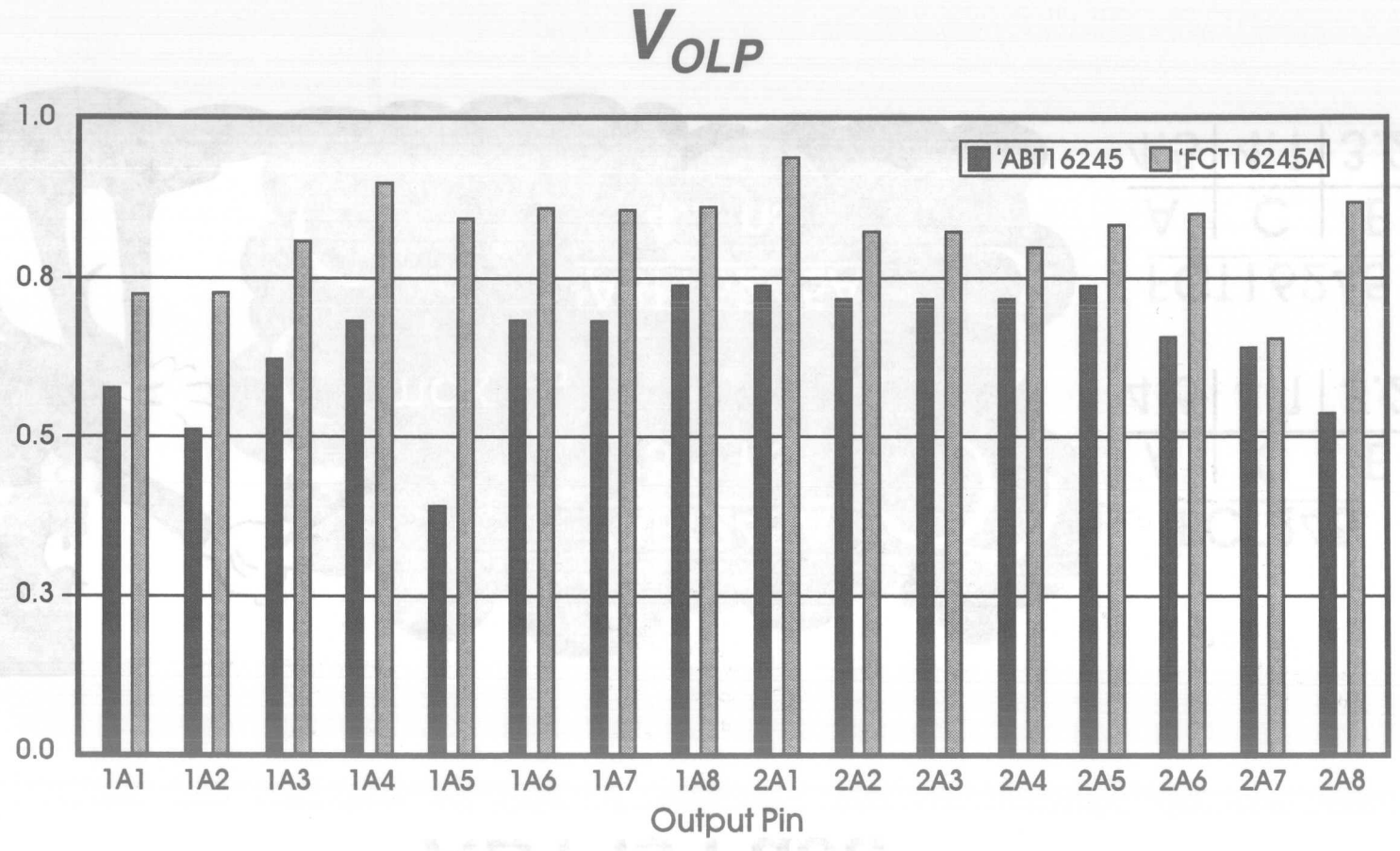
A	C	E
4.6	4.1	3.2

FCT16245

A	C	E
4.5	4.1	3.2

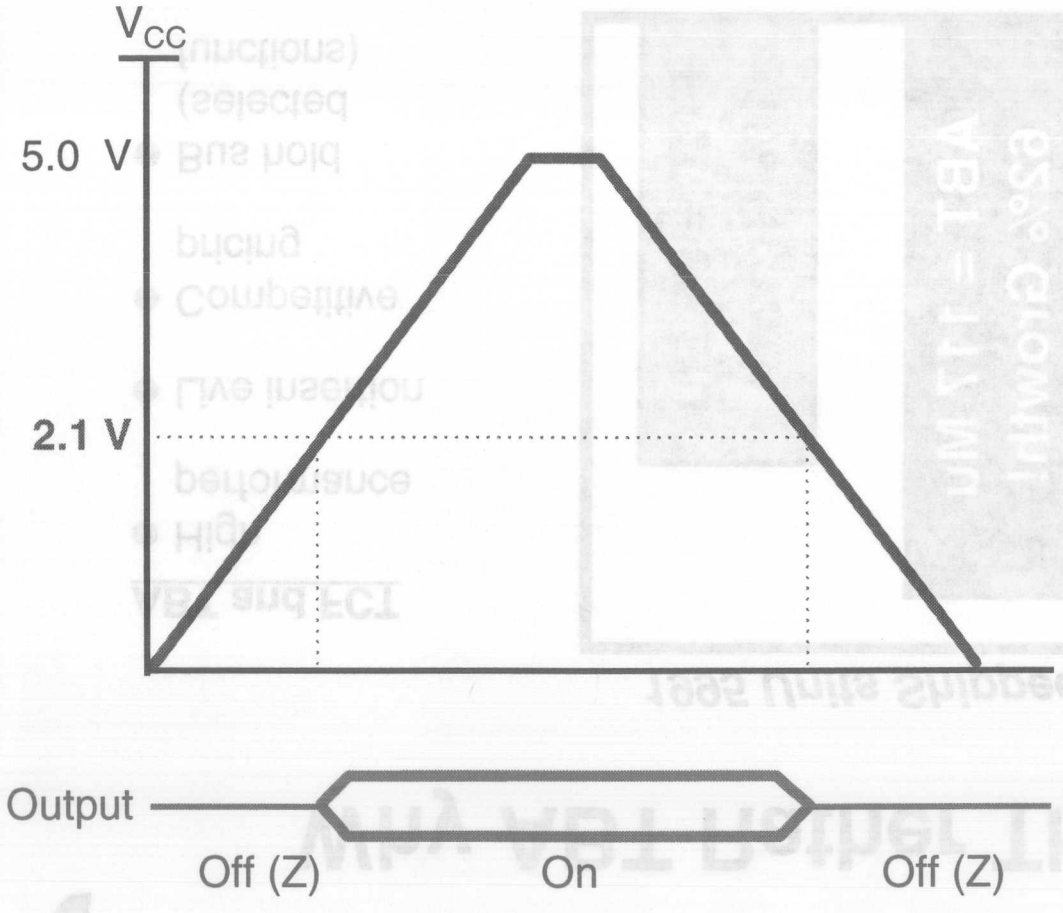
ABT is price competitive with FCT!

ABT Has Lower Ground Bounce!



V_{CC} = 5.5V V, C_L = 50 pF, R_L = 500Ω, 15 Outputs Switching,
Freq = 1 MHz, T_A = 25°C, V_{INL} = 0.5V, V_{INH} = 2.5V

ABT Has Power-Up 3-State!



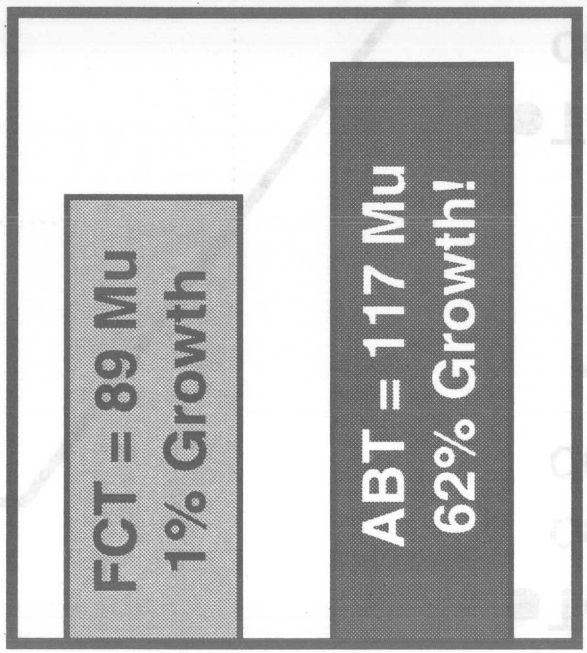
- To ensure valid output levels during power up
  - I_{OZpu}, I_{OZpd} on data sheet
- To ensure high Z on output during power down
  - I_{OFF} on data sheet

Why ABT Rather Than FCT?

ABT and FCT

- High performance
- Live insertion
- Competitive pricing
- Bus hold (selected functions)

1995 Units Shipped*



ABT Only

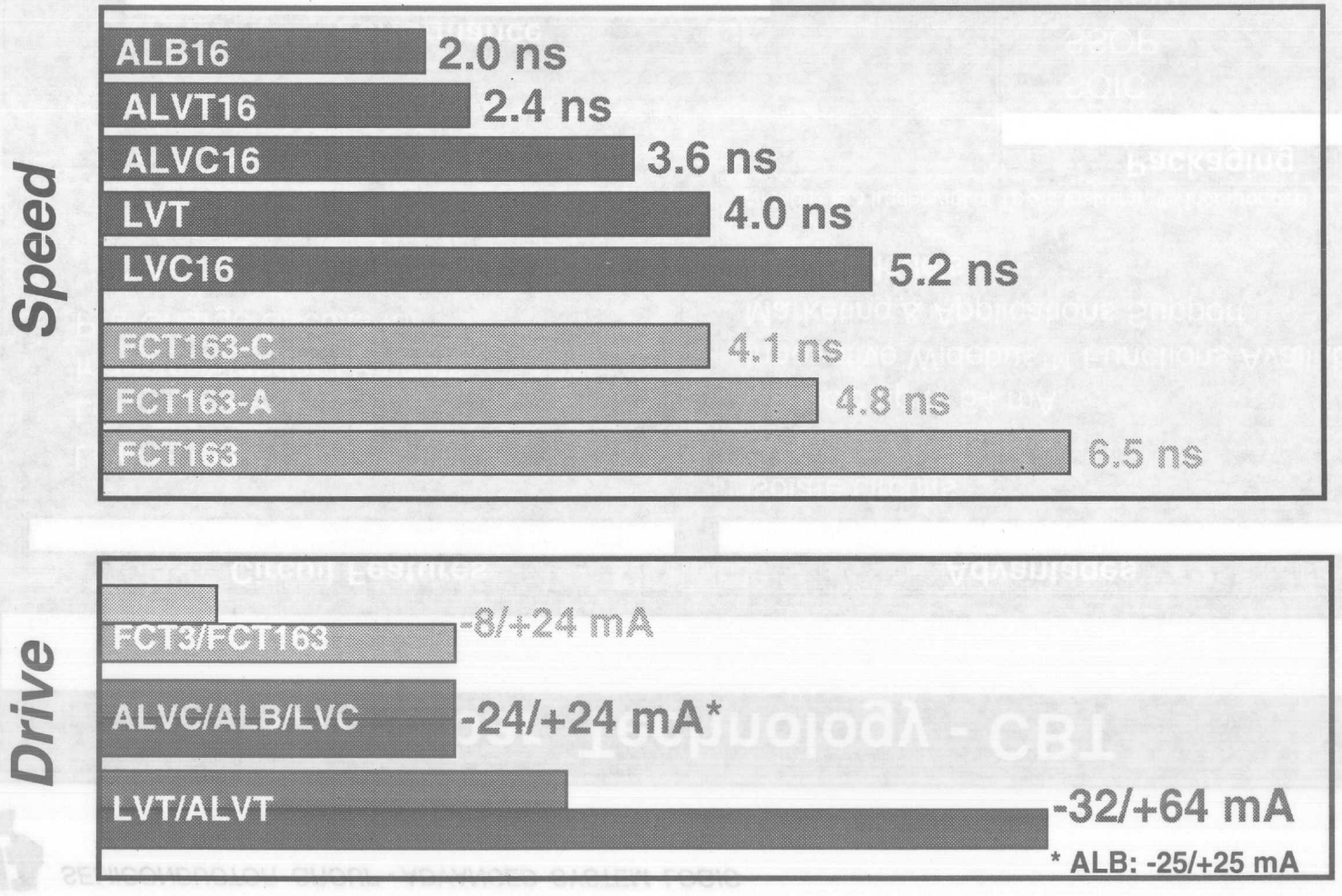
- ✦ Lower ground bounce
- ✦ Power-up 3-state
- ✦ Stronger second sourcing
  - TI/Philips/ Hitachi/ Fairchild (NSC)/ Toshiba

ABT Is the Clear Winner!

TI provides a complete roadmap to lower voltages!

**Source: Insight Onsite*

TI Provides a Faster, More Complete Roadmap to Lower Voltages!



Crossbar Technology - CBT

Circuit Features

Low r_{on} (5 Ω)
Low C_i (4.5 pF)
Industry Standard Pinouts
Pre-Charge Circuits for
Live Insertion

Advantages

Isolate circuits
5V to 3.3V translation
I_i spec'd up to 64 mA
Innovative Widebus™ Functions Available
Marketing & Applications Support
SPICE Models

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Packaging

SOIC
SSOP
TSSOP
Widebus™
Shrink Widebus™

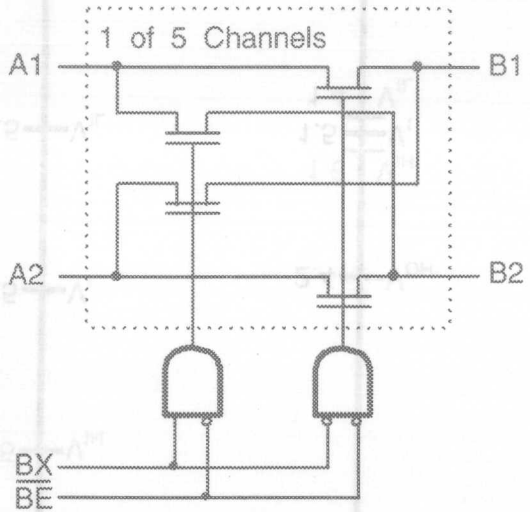
Shrink Widebus is a trademark
of Texas Instruments Incorporated

Performance

250 ps MAX Prop Delay!

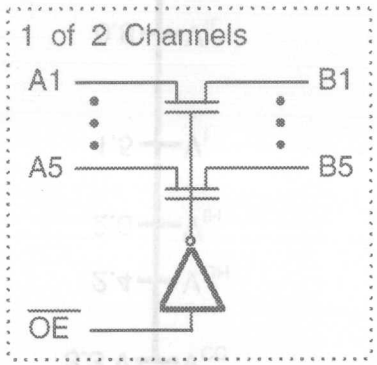
CBT Bus-Exchange Switches

CBT3383 BUS EXCHANGER



- Simple FET Switches
- Functionally Equivalent To: QS3383 and QS3384
- Industry Standard Pinouts ('244, '245)
- Widebus™ Functions Available
- Fine-Pitch Packaging Options (SOIC, SSOP, TSSOP, Widebus, Shrink Widebus™)
- Octals and Widebus available NOW!

CBT3384A BUS SWITCH



CBT DEVICE TYPES

'3306	2-Bit Bus Switch
'3125	4-Bit Bus Switch
'3244	8-Bit, '244 Pinout
'3245A/3345	8-Bit, '245 Pinout
'3253	Dual 4-to-1-Multiplexers
'3257	Quad 2-to-1-Multiplexers
'3383	10-Bit Bus Exchanger
'3384A	10-Bit Bus Switch
'6800	10-Bit VME64 Switch
'16209	18-Bit Bus Exchanger
'16211	24-Bit Bus Switch
'16212/16213	24-Bit Bus Exchanger
'16214	12-Bit 3-to-1 Bus Select
'16244	16-Bit Bus Switch

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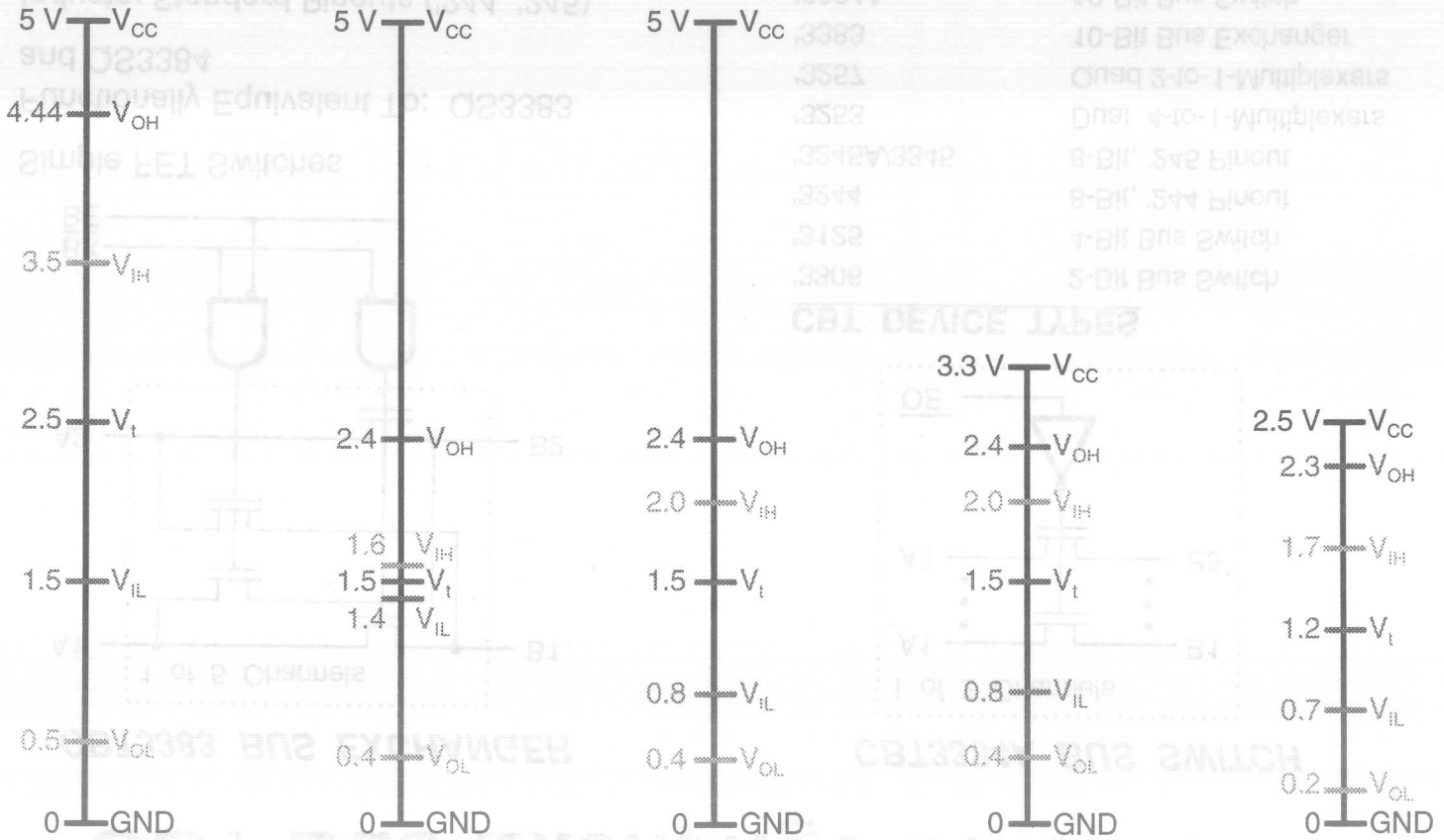
IC Basics

Comparison of Switching Standards



5V CMOS
Rail-to-Rail 5V
HC, AHC, AC

ETL
Larger Noise Margins
ABTE

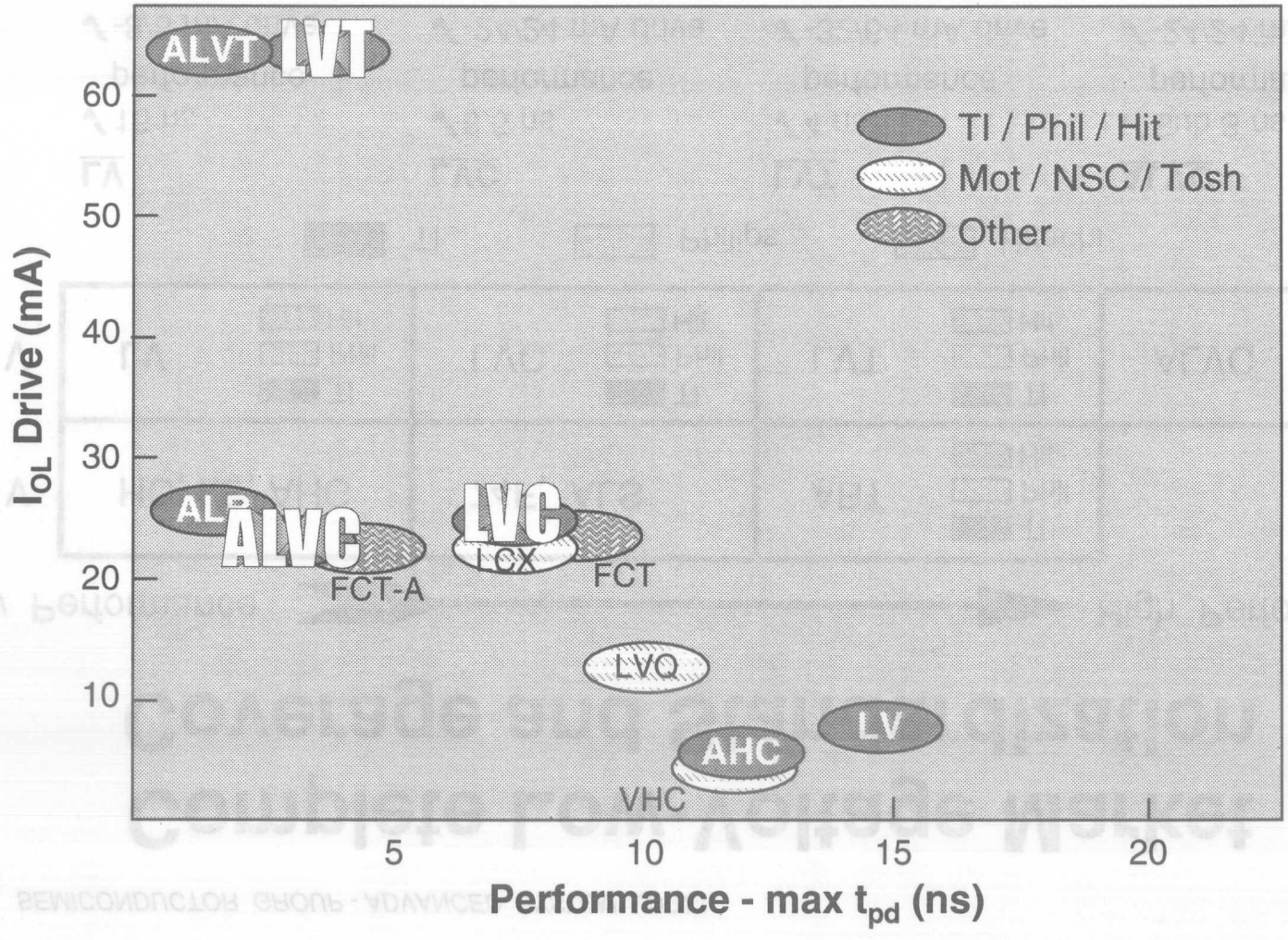
5V TTL
Standard TTL
ABT, AHCT, HCT,
ACT, Bipolar

LVTTL
LVT, LVC, ALVC,
LV, ALVT

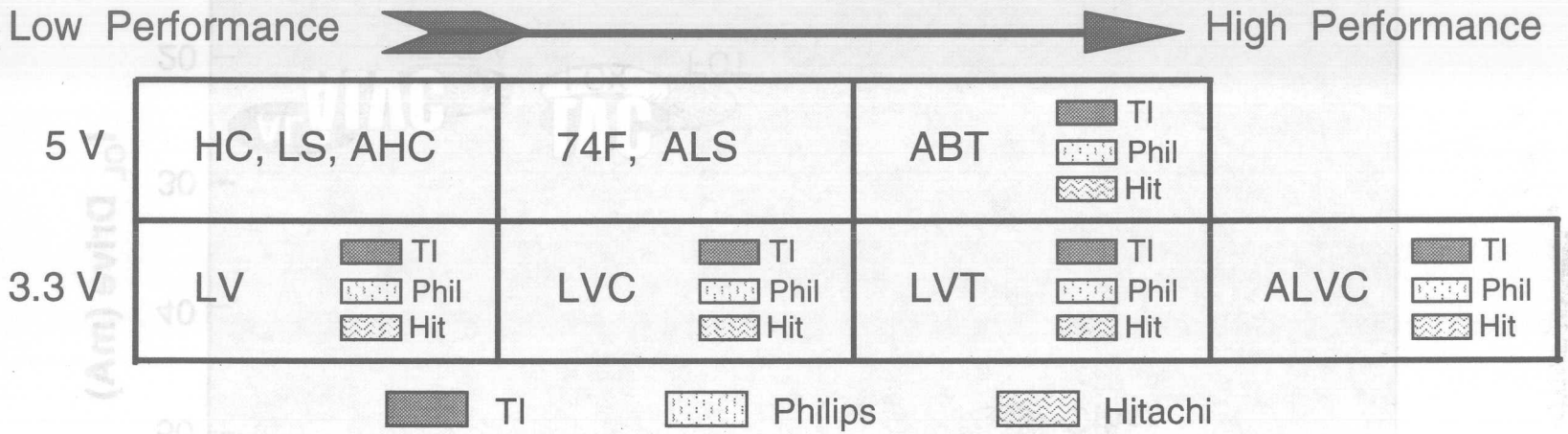
2.5V CMOS
ALVC, ALVT

Low-Voltage Logic

3.3-V Competitive Analysis



Complete Low-Voltage Market Coverage and Standardization



LV

- ✓16 ns performance
- ✓-8/8 mA drive
- ✓Ultra-low (20 µA) standby power
- ✓3 WW sources
- ✓Gate functions

LVC

- ✓6.5 ns performance
- ✓-24/24 mA drive
- ✓Ultra-low (20 µA) standby power
- ✓3 WW sources
- ✓Bus hold
- ✓5-V tolerant
- ✓Gate functions

LVT

- ✓4 ns performance
- ✓-32/64 mA drive
- ✓Low (90 µA) standby power
- ✓3 WW sources
- ✓Bus hold
- ✓5-V tolerant

ALVC

- ✓Sub 3 ns performance
- ✓-24/24 mA drive
- ✓Ultra-low (40 µA) standby power
- ✓3 WW sources
- ✓Bus hold

Low-Voltage Technology - LVT

Circuit Features

- Mixed Mode - 5V TTL - Compatible
- Bus Hold ($I_{I(HOLD)}$)
- Power - On - Demand
- High Drive (-32/64 mA)
- Low Noise
- Damping Resistor Options
- ESD Protection
- V_{IMAX} = 7V DC
- Live Insertion (I_{OFF})

Advantages

- Migrate from 5V to 3.3V with minimum redesign
- Marketing & Applications Support
- SPICE Models
- Internal & External 2nd Sources
- Wide Product Portfolio

Performance

- '245 - 4.4 ns max t_{pd}
- '16245A - 4.1 ns max t_{pd}
- Standby Power = 90 µA

Packaging

- SOIC
- SSOP
- TSSOP
- Widebus™
- Shrink Widebus™

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Low-Voltage CMOS - LVC

Circuit Features

Gates Available
-24/24 mA Drive
No Diode to V_{CC}
5V Tolerant
Bus Hold **
Damping Resistor Options
Live insertion

** selected functions

Advantages

Mid-Range Low Voltage Product (performance/price)
Lower Power Dissipation Capacitance (C_{pd})
Lower Input/Output Capacitance (C_{IN}/C_{OUT})
Marketing & Applications Support
SPICE Models
Internal & External 2nd Sources
Wide Product Portfolio

Performance

'245 - 6.5 ns max t_{pd}
I_{CCZ} - 20 µA max

Packaging

SOIC
SSOP
TSSOP
Widebus™
Shrink Widebus™

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Low Voltage - LV

Circuit Features

Gates Available
-8/8 mA Drive - Bus Interface
-6/6 mA Drive - Gates
Spec'd for 3.3V and 5V Operation

Advantages

Similar in Performance to 5V HCMOS
Marketing & Applications Support
SPICE Models
Internal & External 2nd Sources

Performance

'245 - 14.5 ns max t_{pd}
I_{CCZ} - 20 µA max

Packaging

SOIC
SSOP
TSSOP

Advanced Low-Voltage CMOS - ALVC

Circuit Features

Bus Hold ($I_{I(HOLD)}$)
Drive Capability
(-24/24 mA @ 3.3V V_{CC})
(-6 /12 mA @ 2.5V V_{CC})
Low Noise
Damping Resistor Options
ESD Protection
Spec'd for 3.3V and 2.5V Operation

Advantages

Performance Leadership Product
Marketing & Applications Support
SPICE Models
Internal & External 2nd Sources
Wide Product Portfolio
Specialized Memory Interface
Functions Available for SDRAMs

Performance

'16245 - 3.0 ns max t_{pd} (3.3 V_{CC})
Low Power - 40 µA

Packaging

Widebus™
Shrink Widebus™

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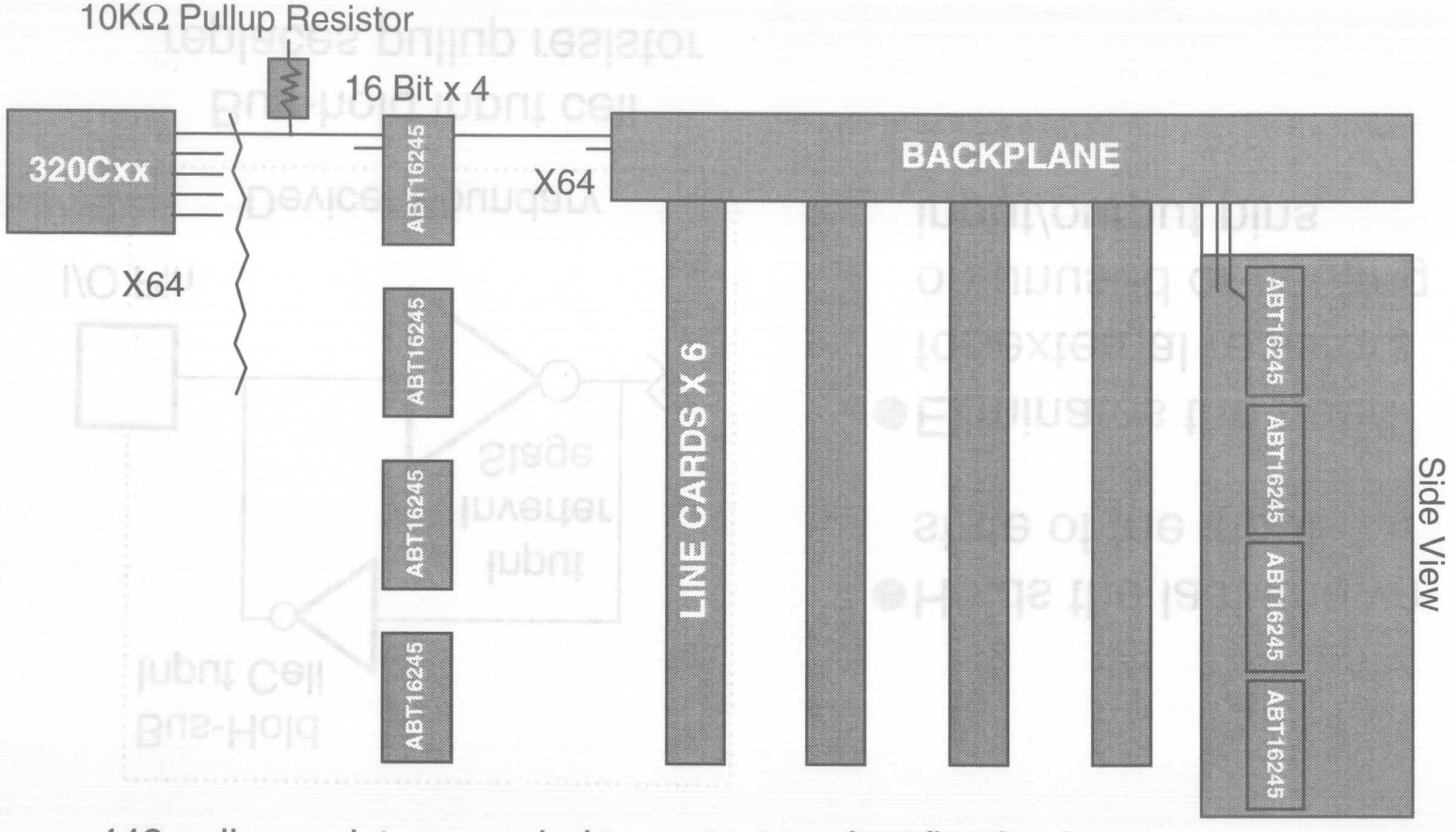
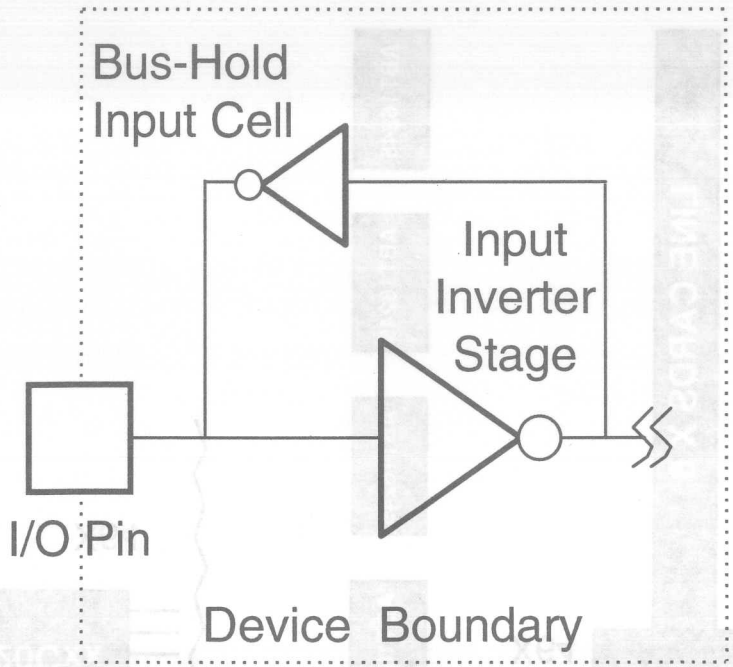
Old Solution for Defining CMOS Inputs



- 448 pullup resistors needed to protect against floating inputs
- Additional cost = $$
- Additional board space
- Additional power consumption (In this case, 1.08W)

Bus-Hold Input Characteristics



Bus-hold input cell replaces pullup resistor

- Holds the last known state of the input
- Eliminates the need for external resistors on unused or floating input/output pins

Logic With Bus Hold

ABTH	- 12 devices with bus hold
LVT	- All LVT devices have bus hold Name change to LVTH in progress
LVCH	- 14 devices with bus hold
ALVCH	- All devices have bus hold (>40 devices)
AHCH/AHCTH	- Bus hold planned on Widebus™ devices

Damping Resistors

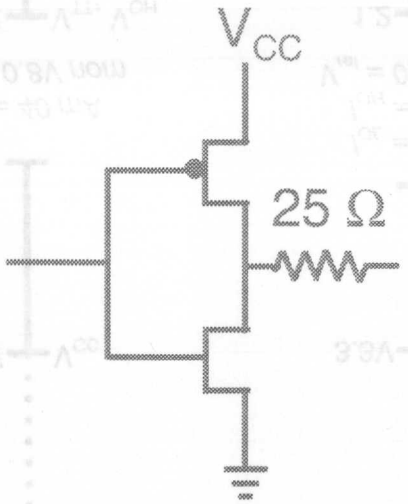
WHY: 1. Damping resistors limit current, thereby reducing noise from undershoot / overshoot

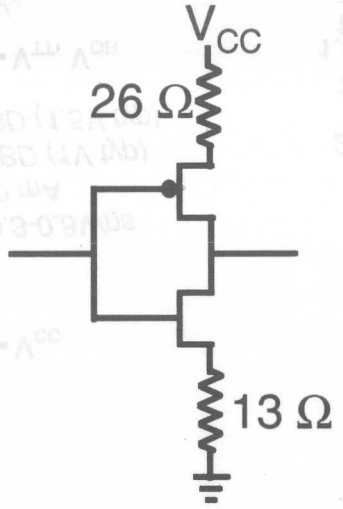
2. Help in line termination (reduce ringing / line reflection to improve signal quality)

eg: ABT2245
ABT162245

Extra "2" in device name indicates damping resistor

TI Damping Resistor vs. IDT Balanced Drive





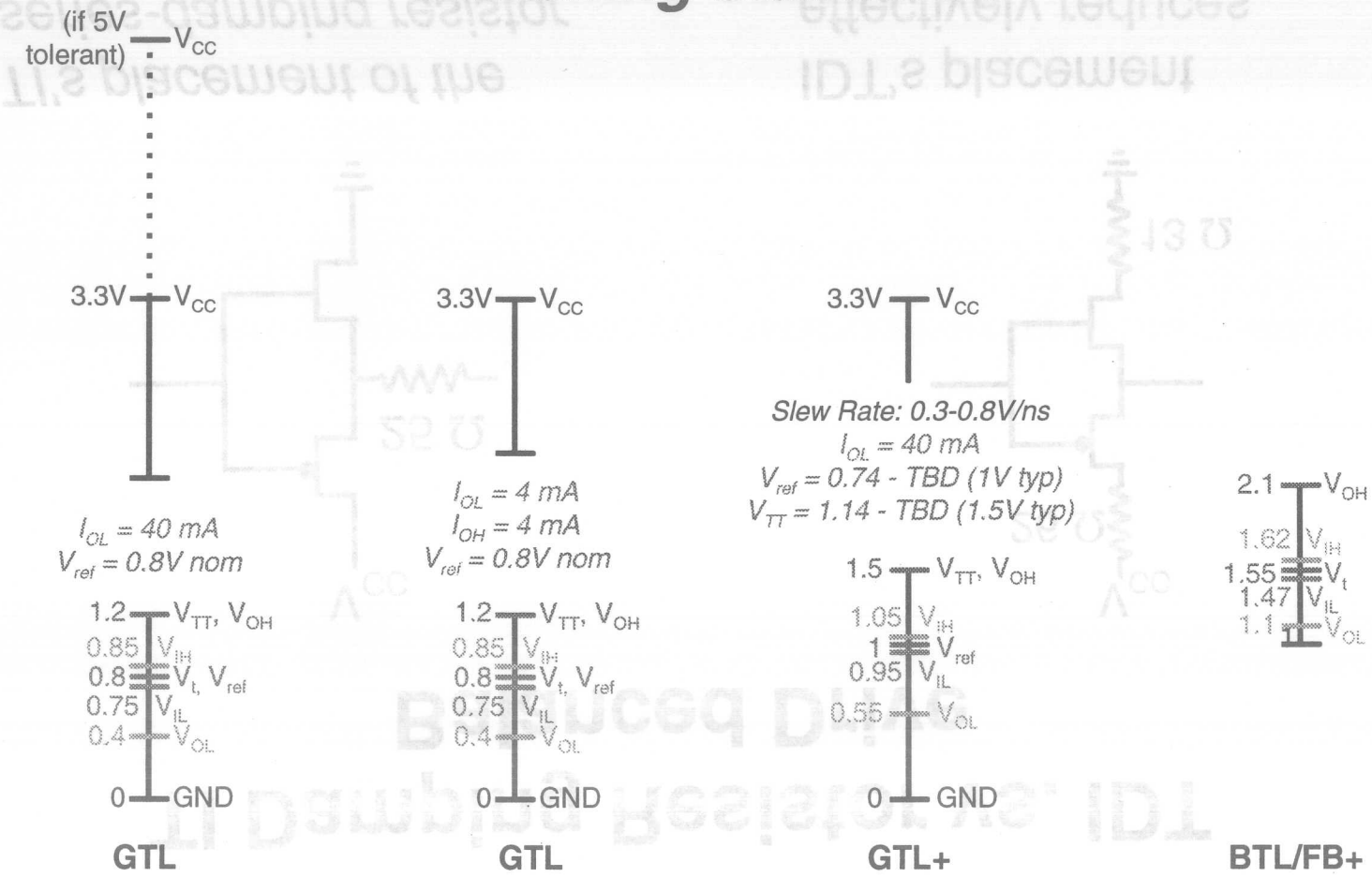
TI's placement of the series-damping resistor meets both goals:

- *Limit current*
- *Help in line termination*

IDT's placement effectively reduces current only. This is not the method preferred for line termination.

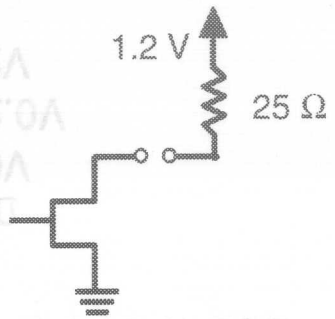
IC Basics

Comparison of Backplane Switching Standards

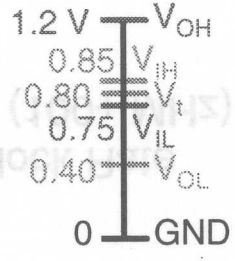


What is GTL?

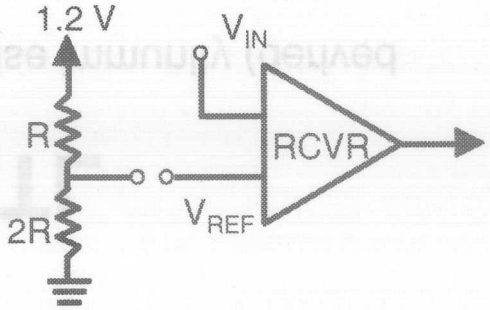
- Driver is an open-drain n-channel CMOS transistor



- Reduced voltage swing reduces power and allows integration into VLSI CMOS



- Receiver stage is a differential input with external V_{REF} set at 0.8V. V_{REF} is derived from simple R/2R voltage divider of 1.2V pull-up.



Advantages of GTL

Noise: External V_{REF} provides common-mode noise immunity (derived from 1.2V pullup).

Low signal amplitude reduces EMI

Speed: Absence of Reflections Allows Higher System Clock Rate
- Very high speed point-to-point communication (100+ MHz)
- Backplane speeds over 60 MHz

Power: High-speed, low-power backplane alternative to BTL or ECL

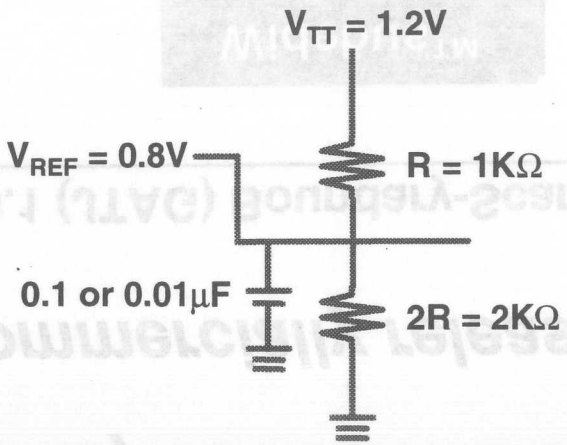
Power Comparison (160 active I/Os)

Technology	Power (watts)	Termination
ECL 10K	20	25 Ω to 3.0V
BTL	11	16.5 Ω to 2.0V
GTL	1.5	50 Ω to 1.2V

Cost: GTL transceivers are less than half the cost per bit as BTL drivers of comparable speeds.

Design Considerations

- V_{TT} (1.2/1.5V) must be regulated from V_{CC}
- V_{REF} must be generated from (1.2/1.5V) V_{TT}
- Add bypass capacitors to regulate the 0.8V V_{REF}



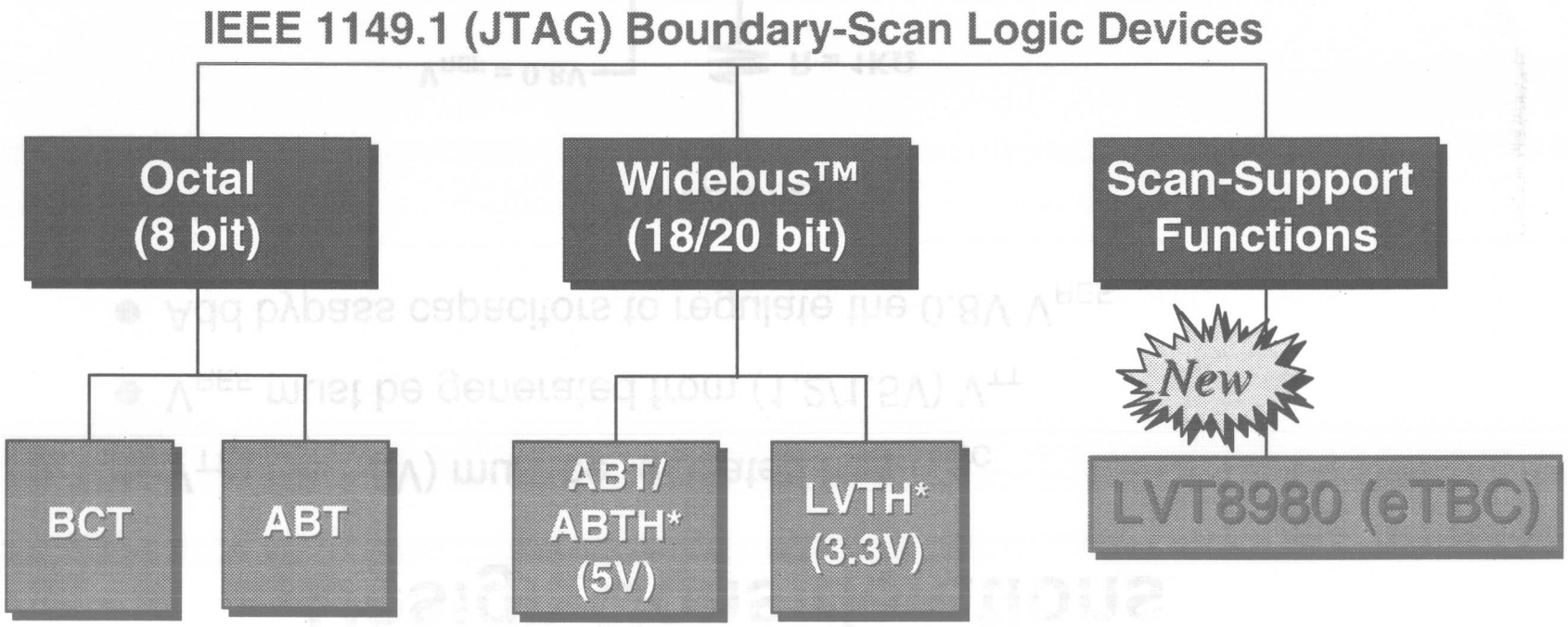
- Need both $3.3V_{CC}$ and $5V_{CC}$ power supply on the 'GTL16612

Linear Technology makes some regulators

5 - 1.2V LT1086 2 amps, GTL+ (1.5V) LT1587-1.5

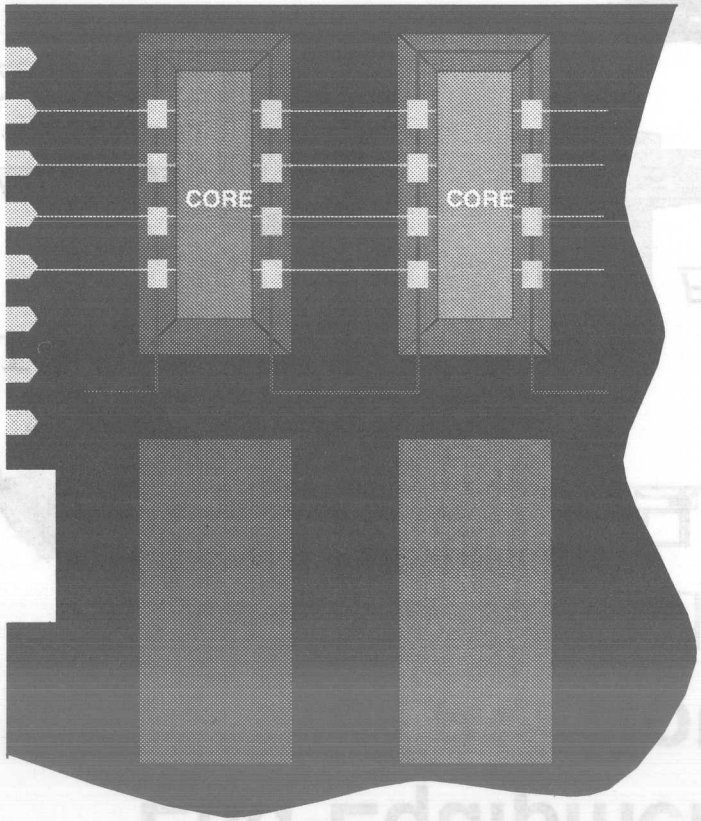
What Does TI Offer in IEEE 1149.1 (JTAG) Silicon Solutions?

30+ commercially released devices



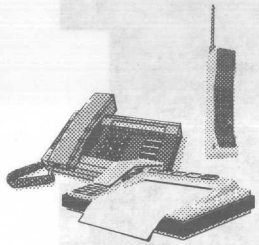
* Bus-hold option

The Boundary-Scan Idea



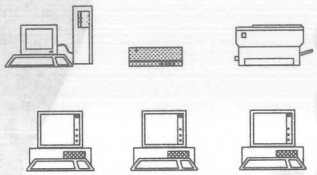
- Scan provides a means to arbitrarily observe test results and source test stimulus
- Scan method requires minimal on-chip/board resources (pins/nets)

End-Equipment Designing with JTAG Boundary Scan

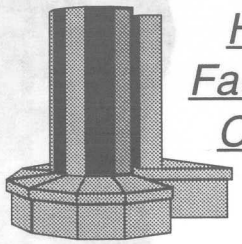


Telecom

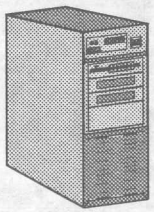
Networking



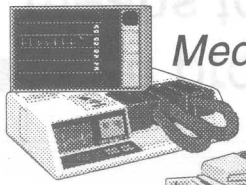
Military



High-End Fault-Tolerant Computers



Mid-Range Server Computers



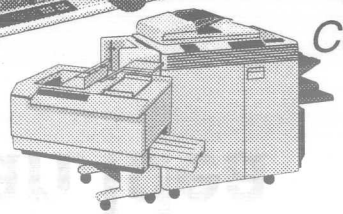
Medical

Imaging Systems

Conferencing

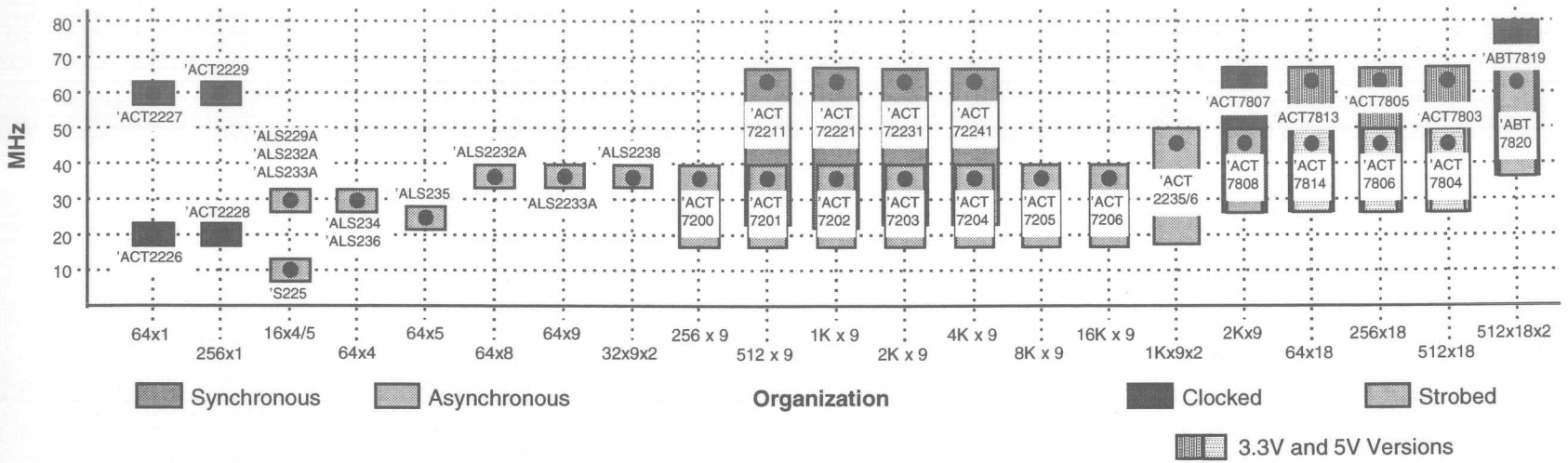
Consumer

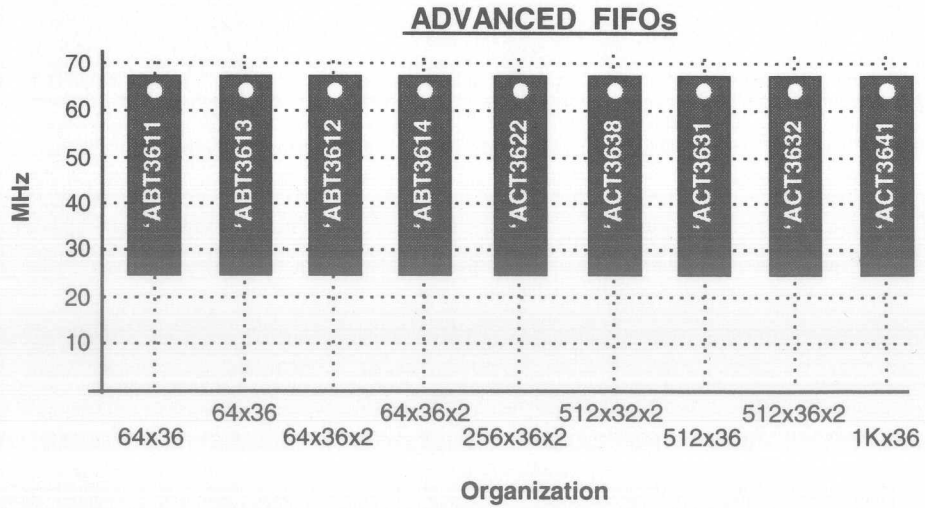
Avionics



Copiers

FIFO Product Portfolio





- Multiple Speed Sorts
- Unidirectional and Bidirectional
- Advanced Fine-Pitch Packaging

FIFO Product Portfolio

- Multiple Speed Sorts
- Unidirectional and Bidirectional
- Advanced Fine-Pitch Packaging

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FUNCTIONAL INDEX

SECTION 2
FUNCTIONAL INDEX

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Buffers/Drivers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																		
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Quad	3S	'125	✔		✔	✔			✔	✔					✔	✔		✔	✔	✔	✔	
		'126	✔		✔				✔	✔		✶			✔	✔		✔			✔	
Noninverting Hex	3S	'365								✔		✶						✔				
	3S	'367								✔		✔						✔				
Inverting Hex	3S	'368								✔		✔						✔				
Noninverting Octal	3S	'241	✔		✔	✔	✔	✔	✔	✔	✔		✔	✔				✔			+	
		'244	✔		✔	✔	✔	✔	✔	✔	✔		✔•	✔•	✔	✔		✔	✔	✔	✔	+LVCH
		'1244					✔															
		'541	✔		✔		✔		✔	✔					✔	✔		✔	✔		+	
	OC	'757						✔														
		'760			✔		✔	✔														
Inverting Octal	3S	'240	✔		✔	✔	✔	✔	✔	✔	✔		✔•	✔•	✔	✔		✔	✔	✔	+	
		'540	✔		✔		✔			✔					✔	✔		✔	✔		+	
	OC	'756			✔			✔														
Inverting and Noninverting Octal	3S	'230						✔														
Octal With Series Resistors on Output	3S	'2240	✔		✔		✔															
		'2241	✔																		+	
		'2244	✔		✔				✔												+	
		'2541					✔															
Noninverting 10 Bit	3S	'827	✔																		+	
		'29827			✔		✔															
Inverting 10 Bit	3S	'828																			+	
		'29828					✔															
10 Bit With Series Resistors	3S	'2827	✔		✔																	
		'2828			✔																	
11 Bit With Series Resistors	3S	'5400	✔																			
		'5401	✔																			

OC = Open Collector OD = Open Drain 3S = 3-State

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated

✶ Product available as a military device only * Product planned as a military device

BUFFERS/DRIVERS AND BUS TRANSCEIVERS

Buffers/Drivers (continued)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																			
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
12 Bit With Series Resistors	3S	'5402	✔																			
		'5403	✔																			
Noninverting 16 Bit	3S	'16241	✔											✔			+				+	
		'16244	✔	✔		✔							✔	✔			✔				✔	
		'16541	✔											✔			+				✔	
Inverting 16 Bit	3S	'16240	✔										✔	✔			✔				✔	
		'16540	✔											✔			+				✔	
		'16828																+				
16 Bit With Series Resistors	3S	'162244	✔			✔											✔				+	
17 Bit IEEE P1284	3S	'161284																			+	
Noninverting 18 Bit	3S	'16825	✔											✔			✔					
		'16835				✔											✔					
18 Bit With Series Resistors	3S	'162825	✔																			
Noninverting 20 Bit	3S	'16827	✔											✔			✔					
20 Bit With Series Resistors	3S	'162827	✔														✔					
1-to-2 Address Drivers	3S	'16830															+					
1-to-2 Address Drivers With Series Resistors	3S	'162830															+					
1-to-4 Address Drivers	3S	'16831															+					
1-to-4 Address Drivers With Series Resistors	3S	'162831															+					

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Bus Transceivers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																			
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Noninverting Quad	3S	'243					✔		✔	✔												
Noninverting Octal	3S	'245	✔		✔	✔	✔	✔	✔	✔			✔•*	✔•	✔	✔		✔	✔	✔	✔	+LVCH
		'1245					✔															
		'25245	✔		✔																	
		'442								✔												
		'466								✔												
		'645					✔	✔		✔								✔	✔			
		'1645					✔															
	OC	'621					✔		✶													
		'641					✔	✔		✔												
	OC/3S	'639					✔	✔														
Inverting Octal	3S	'620	✔				✔															
		'623	✔		✔		✔		✔	✔								✔	✔			
		'640	✔		✔		✔	✔		✔								✔				
		'1640					✔															
	OC	'642					✔			✔												
	OC/3S	'638					✔															
Octal With Series Resistors on B Port	3S	'2245	✔		✔				✔												+	✔LVCR +LVTR
Octal 3.3-V-to-5-V Level Shifter	3S	'4245																			+	
Noninverting 9 Bit	3S	'863	✔																		+	
		'29863			✔		✔															
Noninverting 10 Bit	3S	'861	✔																		+	
Noninverting 16 Bit	3S	'16245	✔	✔		✔							✔	✔			✔				✔	✔ABTE
		'16623	✔											✔								
16 Bit With Series Resistors	3S	'162245	✔			✔											✔					✔LVCR
Noninverting 16-Bit 3.3-V-to-5-V Level Shifter	3S	'164245															✔					

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Bus Transceivers (continued)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																		
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Inverting 16 Bit	3S	'16640	✔										✔	✔								
		'16620											✔	✔								
Noninverting 18 Bit	3S	'16863	✔											✔			✔					
Inverting 18 Bit	3S	'16864												✔								
Noninverting 20 Bit	3S	'16861												✔								
Noninverting 36 Bit	3S	'32245	✔																			

Bus Transceivers With Registers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																		
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Noninverting Octal Registered	3S	'543	✔		✔	✔			✔												+	
		'544																			+	
		'646	✔		✔	✔	✔	✔		✔								✔	✔		+	
		'647								✔												
		'652	✔		✔	✔	✔	✔		✔			•	•				✔	✔		+	
	OC/3S	'653					✔															
		'654					✔															
Inverting Octal Registered	3S	'648					✔	✔		✔												
		'651	✔				✔	✔														
Noninverting 16 Bit Registered	3S	'16470	✔											✔								
		'16543	✔			✔							✔	✔			✔				+	
		'16646	✔			✔							✔	✔							+	
		'16652	✔			✔							✔	✔			+				+	
Inverting 16 Bit Registered	3S	'16544												✔								
		'16648												✔								
		'16651												✔								

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Bus Transceivers With Registers (continued)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																			
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Noninverting 18 Bit Registered	3S	'16474												✔								
		'16524															✔					
		'16525															✔					
Noninverting 18 Bit Registered With Series Resistors	3S	'162525															✔					
Noninverting 36 Bit Registered	3S	'32543	✔																			

Bus Transceivers With Latches

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																			
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Noninverting Octal Registered	3S	'2952	✔			✔															+	
Inverting Octal Registered	3S	'2953			✔																	
Noninverting 16 Bit Registered	3S	'16952	✔			✔								✔			+				+	

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Universal Bus Transceivers (UBT™)/Universal Bus Exchangers (UBE™)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY						
			ABT	BCT	LVT	LV	LVC	ALVC	OTHER
Noninverting 9-Bit 4-Port UBE™	3S	'16409						✔	
Noninverting 9-Bit 4-Port UBE™ With Series Resistors	3S	'162409						✔	
16-Bit Universal Bus Drivers	3S	'16334						+	
Noninverting 18-Bit UBT™	3S	'16500	✔		✔			✔	
		'16501	✔		✔			✔	
		'16600	✔					✔	
		'16601	✔					✔	
Noninverting 36-Bit UBT™	3S	'32501	✔						
Noninverting 16-Bit Tri-Port UBE™	3S	'32316	✔						
Noninverting 18-Bit Tri-Port UBE™	3S	'32318	✔						
18-Bit UBT™ With Series Resistors on B Port	3S	'162500	✔						
		'162501	✔						
		'162601	✔					✔	
Noninverting 18-Bit UBT™ With Parity Generators/Checkers	3S	'16901						✔	
20-Bit Universal Bus Drivers	3S	'16836						+	

Parity Transceivers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																			
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Octal	3S	'656												✔								
		'657	✔																			
8-Bit to 9-Bit Bus	3S	'833	✔																			
8/9 Bit With Parity Checkers/ Generators	3S	'853	✔																			
	3S/OC	'29833					✔															
		'29834			✔																	
		'29854			✔																	
16 Bit	3S	'16657	✔											✔								

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Parity Transceivers (continued)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																		
			ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Dual 8-Bit to 9-Bit Bus	3S	'16833	✔											✔								
		'16853	✔																			

Non-TTL Transceivers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY						
			ABT	BCT	LVT	LV	LVC	ALVC	OTHER
7 Bit TTL/BTL	OC	'2041							✔FB
8 Bit TTL/BTL	OC	'2040							✔FB
8 Bit TTL/BTL Registered	OC	'2033							✔FB
9 Bit TTL/BTL Competition	OC	'2032							+FB
9 Bit TTL/BTL Address/Data	OC	'2031							✔FB
11 Bit Incident Wave Switching	OC	'16246							✔ABTE
Noninverting 16 Bit	OC	'16245							✔ABTE
17 Bit TTL/BTL Universal Storage	OC	'1651							✔FB
Noninverting 17-Bit UBT™ With Buffered Clock Outputs and Output Edge Control (OEC™)	OD	'16616							✔GTL
18 Bit TTL/BTL Universal Storage	OC	'1650							✔FB
18 Bit LVTTL-to-GTL/GTL+ Registered	OC	'16922							+GTL
		'16923							+GTL
Noninverting 18-Bit UBT™ With Output Edge Control (OEC™)	OD	'16612							✔GTL
Noninverting 18-Bit UBT™	OD	'16622							+GTL

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Flip-Flops

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																	
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Dual J-K Edge Triggered	3S	'73							✔												
		'107							✔												
		'109				✔	✔	✔	✔								✔				
		'112				✔		✔	✔	✔							✔			✔	+CDC
Dual D-Type		'74				✔	✔	✔	✔	✔	✔	✔•	✔•	✔	✔		✔	✔	✔	✔	
Dual 4 Bit D-Type Edge Triggered	3S	'876				✔	✔														
Quad D-Type		'175				✔	✔	✔	✔	✔	✔						✔				
Quad D-Type With Clock Enable		'379							✔												
Quad J-K		'276									✔										
		'376								✔	✔										
Hex D-Type		'174				✔	✔	✔	✔	✔							✔		✔		
		'378							✶												
Octal D-Type True Data	3S	'374	✔	✔		✔	✔	✔	✔	✔		✔•	✔•	✔	✔		✔	✔	✔	✔	
		'574	✔	✶	✔	✔	✔	✔				✔	✔	✔	✔		✔	✔	✔	✔	
Octal D-Type True Data With Clear		'273	✔		✔	✔			✔								✔	✔	✔		
	3S	'575				✔	✔														
		'874				✔	✔														
Octal D-Type True Data With Clock Enable		'377	✔					✔	✔								✔	✔			
Octal D-Type Inverting	3S	'534	✔			✔						✔	✔				✔				
		'564				✔						✔	✔								
		'576				✔	✔														
Octal Dual Ranked True Data	3S	'4374					✔														
Octal Inverting With Clear	3S	'577				✔															
Octal True Data	3S	'825					✔														

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Flip-Flops (continued)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																		
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
9 Bit True Data	3S	'823	✔				✔													+	
		'29823		✔		✶															
10 Bit Noninverting	3S	'16820														✔					
10 Bit True Data	3S	'821	✔				✔													✔	
		'29821		✔		✔															
10 Bit With Dual Outputs and Series Resistors	3S	'162820														✔					
16 Bit Noninverting	3S	'16374	✔		✔							✔	✔			✔				✔	
16 Bit D-Type With Series Resistors	3S	'162374			+																
18 Bit Noninverting	3S	'16823	✔									✔	✔			✔					
18 Bit Bus Interface With Series Resistors	3S	'162823	✔																		
20 Bit Noninverting	3S	'16721														✔					
		'16821	✔										✔			✔					
20 Bit Noninverting With Series-Damping Resistors	OD	'162721														✔					
		'162821														+					

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Latches

DESCRIPTION	NO. OF BITS	OUTPUT	TYPE	TECHNOLOGY																		
				ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
D-Type Edge Triggered Inverting and Noninverting	8	3S	'996				✔															
D-Type Transparent Readback, True	8	3S	'990				✔															
	9	3S	'992				✔															
	10	3S	'994				✔															
D-Type Transparent With Clear, True Outputs	8	3S	'666				✔															
D-Type Transparent With Clear, Inverting Outputs	8	3S	'667				✔															
D-Type Transparent True	8	3S	'373	✔	✔		✔	✔	✔	✔	✔		✔•	✔•	✔*	✔*		✔	✔	✔	✔	
			'2373	✔					✔													
			'573	✔	✶	✔	✔	✔	✔				✔	✔	✔*	✔*		✔	✔	✔	✔	
	16	3S	'16373	✔		✔							✔	✔			✔				✔	
D-Type Dual 4 Bit Transparent True	8	3S	'873				✔	✔														
D-Type Transparent Inverting	8	3S	'533	✔			✔	✔					✔	✔								
			'563				✔						✔	✔				✔				
			'580				✔															
Addressable	8	2S	'259				✔			✔								✔				
D-Type True Inputs	8	3S	'845				✔															
	9	3S	'843	✔			✔														+	
			'29843		✔																	
	10	3S	'841	✔			✔														✔	
			'29841		✔		✔															
	18	3S	'16843	✔													+					
	20	3S	'16841	✔										✔			✔					

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Latches (continued)

DESCRIPTION	NO. OF BITS	OUTPUT	TYPE	TECHNOLOGY																		
				ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
D-Type True Inputs With Series Resistors	20	3S	'162841	+										+								
D-Type Inverting Inputs	10	3S	'842				✔															
D-Type	4		'75							✔												
Quad Set/Reset			'279							✔		✶										
Bistable	4		'375							✔												
4 × 4 Register File			'670							✔												
Dual 16 Word × 4 Bits		3S	'870				✔															
D-Type With Series Resistors	16	3S	'162373			+																

BUS-TERMINATION ARRAYS

Bus-Termination Arrays

DESCRIPTION	TYPE	TECHNOLOGY					
		ALS	AS	F	S	TTL	ACT
10 Bit	'1071						✔
16 Bit	'1073						✔
8 Bit Schottky Barrier Diode	'1050				✔		
	'1056			✔	✔		
12 Bit Schottky Barrier Diode	'1051				✔		
16 Bit Schottky Barrier Diode	'1016			✔			
	'1052				✔		
	'1053				✔		
18 Bit Schottky Barrier Diode R-C	'1018			✔	✔		

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Bus Switches

DESCRIPTION	TYPE	TECHNOLOGY			
		CBT	CBTS	CBTD	OTHER
Quad Bus Switches	'3125	✔			
	'3126	✔			
Dual 4-Bit Bus Switches With '244 Pinout	'3244	✔			
8-Bit Bus Switches With '245 Pinout	'3245	✔			
Dual 4-Bit-to-1-Bit FET Multiplexers/Demultiplexers	'3253	✔			
8-Bit-to-1-Bit Multiplexers/Data Selectors	'3251	✔			
Quad 2-to-1-Bit FET Multiplexers/Demultiplexers	'3257	✔			
Dual Bus Switches	'3306	✔	✔	✔	
8-Bit Bus Switches	'3345	✔			
10-Bit Bus-Exchange Switches	'3383	✔			
10-Bit Bus Switches	'3384	✔	✔	✔	
10-Bit Bus-Exchange Switches With Extended Voltage Range	'3386	+			
10 Bit With Precharged Outputs for Live Insertion	'6800	✔			
18-Bit Bus-Exchange Switches	'16209	✔			
24-Bit Bus-Exchange Switches	'16211	✔			
	'16212	✔			
	'16213	✔			
12-Bit 3-to-1 Bus Select	'16214	✔			
Synchronous 16-Bit-to-32-Bit FET Multiplexers	'16232	✔			
16-Bit-to-32-Bit FET Multiplexers/Demultiplexers	'16233	✔			
16-Bit Bus Switches	'16244	✔			

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TEXAS INSTRUMENTS

Synchronous Counters – Positive Edge Triggered

DESCRIPTION	PARALLEL LOAD	TYPE	TECHNOLOGY												
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AHC	AHCT	HC	HCT
4 Bit Decade Up/Down	Sync	'568				✔									
4 Bit Binary	Sync	'161				✔	✔	✔	✔					✔	
		'163				✔	✔	✔	✔	✔	✳			✔	
		'561				✔									
4 Bit Binary Up/Down	Sync	'93							✔						
		'169				✔	✔	✔	✔	✔					
		'569				✔									
		'191				✔			✔		✳			✔	
		'193				✔			✔		✔			✔	
8 Bit Up/Down	Sync	'697							✔						
	Sync Clear	'869				✔	✔								
	Async Clear	'867				✔	✔								

Asynchronous Counters (Ripple Clock) – Negative Edge Triggered

DESCRIPTION	PARALLEL LOAD	TYPE	TECHNOLOGY												
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AHC	AHCT	HC	HCT
Dual 4 Bit Binary	None	'390							✔						
		'393							✔		✳			✔	
12 Bit Binary	Async	'4040												✔	
14 Bit Binary	Async	'4020												✔	
		'4060												✔	

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COUNTERS

Other Counters

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY												
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AHC	AHCT	HC	HCT
4 Bit Up/Down	3S	'669							✔						
Binary With Input Register	3S	'592							✔						
Decade	3S	'90							✔		✶				
Divide By 12	3S	'92							✔		✶				
16 Bit Programmable	3S	'294							✔						
31 Bit Programmable	3S	'292							✔						
Parallel Register Outputs	3S	'590							✔					✔	
Parallel Register Inputs	3S	'593							✔						

SHIFT REGISTERS

Shift Registers

DESCRIPTION	NO. OF BITS	OUTPUT	TYPE	TECHNOLOGY													
				ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AHC	AHCT	HC	HCT	LV
Octal Storage Registers	8		'396							✔							
Octal Serial In With Output Storage Registers	8		'596							✔							
Parallel In, Parallel Out, Bidirectional	4		'194					✔		✔	✔						
	8		'299				✔		✔	✔	✔						
			'323				✔			✔							
Parallel In, Parallel Out	4		'195							✔	✔	✶					
Serial In, Parallel Out	8		'164				✔			✔		✶			✔		✔
Parallel In, Serial Out	8		'165				✔			✔					✔		
			'166				✔			✔		✶			✔		
Serial In, Parallel Out With Input Latches	8		'597							✔							
	8		'598							✔							

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Shift Registers (continued)

DESCRIPTION	NO. OF BITS	OUTPUT	TYPE	TECHNOLOGY													
				ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AHC	AHCT	HC	HCT	LV
Serial In, Parallel Out With Output Latches	8	3S	'594							✔					✔		
			'595							✔					✔		
	8		'599							✔							
Noninverting	8	3S	'299				✔		✔	✔	✔						
	9	3S	'29823			✔	✶										
16 Bit Serial In With Output Storage Registers	16		'673							✔							
16 Bit Serial Out	16		'674							✔							

ENCODERS, DATA SELECTORS/MULTIPLEXERS, AND BUS EXCHANGERS

Encoders, Data Selectors/Multiplexers, and Bus Exchangers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																	
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC
Data Selectors/Multiplexers		'150									✔									
Quad 2-to-1		'157				✔	✔	✔	✔	✔	✔			+	+		✔	✔		✔
		'158				✔	✔	✔	✔	✔				+	+					+
		'298					✔		✔		✶									
	3S	'257				✔	✔	✔	✔	✔			•	+	+		✔	✔		✔
		'258				✔	✔	✔	✔	✶				+	+					+
Quad 2-Input Multiplexers		'399							✔											
Hex 2-to-1	3S	'857				✔														
Dual 4-to-1		'153				✔	✔	✔	✔	✔	✶						✔			
	3S	'253				✔	✔	✔	✔								✔			
		'353					✔													
4-to-1 Registered Transceivers	3S	'16460	✔																	
Cascadable Octals		'148							✔		✔						✔			
8-to-1		'151				✔	✔	✔	✔	✔							✔			
	3S	'251				✔		✔	✔	✔	✶						✔			
8-to-3 Line Encoders		'348							✔											

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ENCODERS, DATA SELECTORS/MULTIPLEXERS, AND BUS EXCHANGERS

Encoders, Data Selectors/Multiplexers, and Bus Exchangers (continued)

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY																	
			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC
9-Bit 4-Port Universal Bus Exchangers		'16409														✔				
12-to-24 Multiplexed	3S	'16260	✔													✔				
12-to-24 Registered Bus Exchangers	3S	'16269														✔				
		'16270														✔				
12-to-24 Multiplexed Bus Exchangers	3S	'16271														+				
		'16272														+				
12-to-24 SDRAM Interleave Multiplexers		'16268														+				
16-to-1	3S	'250					✔													
16-to-32 Bit Registered Bus Exchangers With Series Resistors		'162280														+				
18-to-32 Bit Registered Bus Exchangers		'16282														✔				
18-to-32 Bit Registered Bus Exchangers With Series Resistors		'162282														+				
32-to-16 VL Bus Multiplexers		'16254											✔							

DECODERS/DEMULTIPLEXERS AND OSCILLATORS

Decoders/Demultiplexers

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY														
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	OTHER
Dual 2-to-4		'139	✔			✔	✔		•	•	+	+		✔	✔		+	
	OC	'156	✔			✔		✔										
3-to-8		'138	✔	✔	✔	✔	✔		•		+	+		✔	✔	✔	✔	
3-to-8 With Address Registers		'137	✔	✔		✔											+	
4-to-10 BCD-to-Decimal		'42				✔								✔				

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Oscillators

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY									
			ALS	AS	F	LS	S	TTL	AC	ACT	HC	HCT
Voltage Controlled	2S	'124					✔					
		'624				✔						
		'628				✔						
		'629				✔						
Crystal Controlled	2S	'321				✔						

COMPARATORS AND PARITY GENERATORS/CHECKERS

Comparators

DESCRIPTION								TYPE	TECHNOLOGY								
INPUT	P=Q	$\overline{P=Q}$	P>Q	$\overline{P>Q}$	P<Q	OUTPUT	ENABLE		ALS	AS	F	LS	S	AC	ACT	HC	HCT
4 Bit Binary	No	Yes	No	No	No	2S	Yes	'85				✔	✔				
8 Bit With 20-kΩ Pullup	No	Yes	No	No	No	2S	Yes	'520	✔								
	No	Yes	No	Yes	No	2S	No	'682				✔				✔	
8 Bit Standard	No	Yes	No	No	No	2S	Yes	'521	✔		✔						
	No	Yes	No	Yes	No	2S	No	'684				✔				✔	
	No	Yes	No	No	No	2S	Yes	'686				✔					
	No	Yes	No	No	No	2S	Yes	'688	✔			✔				✔	
8 Bit Latched P	No	No	Yes	No	Yes	2S	Yes	'885		✔							

Parity Generators/Checkers

DESCRIPTION	NO. OF BITS	TYPE	TECHNOLOGY									
			ALS	AS	F	LS	S	TTL	AC	ACT	HC	HCT
Odd/Even	9	'280	✔	✔	✔	✔	✔					
		'286		✔						•		

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ARITHMETIC CIRCUITS

Adders

DESCRIPTION	TYPE	TECHNOLOGY											
		ALS	AS	F	LS	S	TTL	HC	HCT	AC	ACT	LV	LVC
4 Bit	'283			✔	✔	✔							

Arithmetic Logic Units

DESCRIPTION	TYPE	TECHNOLOGY											
		ALS	AS	F	LS	S	TTL	HC	HCT	AC	ACT	LV	LVC
4 Bit	'181		✔		✶	✶							
	'381					✔							
	'382				✔								

Dividers/Multipliers

DESCRIPTION	TYPE	TECHNOLOGY											
		ALS	AS	F	LS	S	TTL	HC	HCT	AC	ACT	LV	LVC
Binary Rate Multipliers	'97						✔						
Digital Phase Lock Loop	'297				✔								

Monostable Multivibrators

DESCRIPTION	TYPE	TECHNOLOGY											
		ALS	AS	F	LS	S	TTL	HC	HCT	AC	ACT	LV	LVC
1 Shot	'121						✔						
1-Shot Multivibrators	'122				✔								
Dual	'123				✔								
	'221				✔								
Retriggerable	'423				✔								

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TEXAS INSTRUMENTS

Positive-AND Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Single 2 Input		'1G08									✔	✔				
Quad 2 Input	OC	'09	✔			✔	✔									
		'7001											✔			
Dual 4 Input		'21	✔	✔	✔	✔							✔			
Triple 3 Input		'11	✔	✔	✔	✔	✔		✔	✔			✔			
Quad 2 Input		'08	✔	✔	✔	✔	✔		✔•	✔•	✔*	✔	✔	✔	✔	✔
		'1008		✔												
Hex 2 Input		'808		✔												
		'1808		✔												

Positive-NAND Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Single 2 Input		'1G00									✔	✔				
8 Input		'30	✔	✔	✔	✔	✔	✔								
13 Input		'133	✔				✔									
Dual 4 Input		'20	✔	✔	✔	✔	✔						✔			
Triple 3 Input		'10	✔	✔	✔	✔	✔		✔	✔			✔			✔
Quad 2 Input		'00	✔	✔	✔	✔	✔	✔	✔•	✔*	✔*	✔	✔	✔	✔	✔
	OC	'01				✔										
	3S	'26				✔										
		'37	✔			✔	✔	✔								
	OC	'38	✔		✔	✔	✔	✔								
		'132				✔	✔	✔					✔			
		'1000		✔												
Hex 2 Input		'804	✔	✔												
		'1804		✔												
Quad 2 Input	OC	'03	✔			✔	✶						✔			

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Positive-OR Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Single 2 Input		'1G32									✔	✔				
Quad 2 Input		'32	✔	✔	✔	✔	✔	✔	✔•	✔•*	✔	✔	✔	✔	✔	✔
		'1032		✔												
	3S	'7032											✔			
Hex 2 Input		'832	✔	✔												
		'1832		✔												

Positive-NOR Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Single 2 Input		'1G02									+	+				
Dual 5 Input		'260			✔		✔									
Triple 3 Input		'27	✔	✔	✔	✔		✶					✔			
Quad 2 Input		'02	✔	✔	✔	✔	✔	✶					✔	✔	✔	✔
	OC	'33	✶			✔										
		'7002											✔			
Hex 2 Input		'805	✔	✔												
		'1805		✔												

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XOR Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Single 2 Input		'1G86									+	+				
Quad 2 Input		'86	✔		✔	✔	✶	✶	✔•	✔	✔	✔	✔			✔
	OC	'136				✔										

XNOR Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Quad 2 Input	OD	'266				✔							✔			

AND/NOR Gates

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Dual 3 Input		'51				✔	✔									

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HEX INVERTERS/NONINVERTERS AND DELAY ELEMENTS

Hex Inverters/Noninverters

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Hex Inverters		'04	✔	✔	✔	✔	✔	✔	✔•	✔•	✔	✔	✔	✔	✔	✔
		'U04									✔		✔		✔	✔
		'1G04								+	+					
		'1GU04								+	+					
	OC	'05	✔			✔	✔	✔					✔			
		'06				✔		✔								
		'14				✔		✔	✔	✔*	✔	✔	✔		✔	✔
		'1G14									+	+				
		'16						✔								
		'19				✔										
		'1004	✔	✔												
		'1005	✔													
Hex Noninverters	OC	'07				✔		✔								
		'17						✔								
	OC	'35	✔													
		'128						✔								
		'140					✔									
		'1034	✔	✔												
	OC	'1035	✔													
		'4066											✔			

Delay Elements

DESCRIPTION	OUTPUT	TYPE	TECHNOLOGY													
			ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	HC	HCT	LV	LVC
Hex		'31				✔										

OC = Open Collector OD = Open Drain 3S = 3-State

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated

✶ Product available as a military device only * Product planned as a military device

IEEE 1149.1 Boundary-Scan Logic

DESCRIPTION	NO. OF BITS	OUTPUT	TYPE	TECHNOLOGY									
				ABT	BCT	LVT	F	LS	S	TTL	AC	ACT	OTHER
Buffers/Drivers	8	3S	'8240		✔								
			'8244		✔								
Transceivers	8	3S	'8245	✔	✔								
	18	3S	'18245	✔		+							
Transparent Latches	8	3S	'8373		✔								
Flip-Flops	8	3S	'8374		✔								
Registered Transceivers	8	3S	'8543	✔									
			'8646	✔									
			'8652	✔									
			'8952	✔									
	18	3S	'18502	✔		✔*							
			'18646	✔		+							
			'18652	✔		+							
	20	3S	'18504	✔		✔							
Inverting Bus Transceivers	18	3S	'18640	✔									
UBT™	18	3S	'18512			+							
			'182512			+							
			'18516			+							
			'182516			+							
UBT™ With Series Output ResistorsParity Generators/Checkers	18	3S	'182502	✔		✔							
UBT™	20	3S	'18514			+							
			'182514			+							
UBT™ With Series Output ResistorsParity Generators/Checkers	20	3S	'182504	✔									

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IEEE 1149.1 (JTAG) BOUNDARY-SCAN LOGIC DEVICES

Scan-Support Devices

DESCRIPTION	TYPE	TECHNOLOGY									
		ABT	BCT	LVT	F	LS	S	TTL	AC	ACT	OTHER
Test Bus Controllers	'8980			+							
	'8990									✔	
Digital Bus Monitors	'8994									✔	
Addressable Scan Port Devices	'8996	✔									
Scan-Path Linkers	'8997									✔	
Scan-Path Selectors	'8999									✔	

FIFO MEMORIES

First-In, First-Out (FIFO) Memories

DESCRIPTION		OUTPUT	TYPE	TECHNOLOGY											
SIZE	TYPE†			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	ALVC
16 Words × 4 Bits	U	3S	'224							✔					
			'232				✔								
16 Words × 5 Bits	U	3S	'225								✔				
			'233				✔								
32 Words × 9 Bits	B	3S	'2238				✔								
64 Words × 4 Bits	U		'236				✔								
64 Words × 8 Bits	U	3S	'2232				✔								
64 Words × 9 Bits	U	3S	'2233				✔								
64 Words × 18 Bits	U, C	3S	'7813											✔	✔
	U	3S	'7814											✔	✔

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† U = Unidirectional
B = Bidirectional
C = Clocked
S = Synchronized

First-In, First-Out (FIFO) Memories (continued)

DESCRIPTION		OUTPUT	TYPE	TECHNOLOGY											
SIZE	TYPE†			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	ALVC
64 Words × 36 Bits	B, C	3S	'3612	✔											
			'3614	✔											
	U, C	3S	'3611	✔											
			'3613	✔											
Dual 64 × 1	C	3S	'2226											✔	
			'2227											✔	
Dual 256 × 1	C	3S	'2228											✔	
			'2229											✔	
256 Words × 9 Bits	U	3S	'7200L											✔	
256 Words × 18 Bits	U, C	3S	'7805											✔	✔
	U	3S	'7806											✔	✔
256 × 36 × 2 Bits	B, C	3S	'3622											✔	
512 Words × 9 Bits	U	3S	'7201LA											✔	
			'72211L											✔	
512 Words × 18 Bits	U, C	3S	'7803											✔	✔
	U	3S	'7804											✔	✔
	B, C	3S	'7819	✔											
	B	3S	'7820	✔											
512 Words × 32 Bits	B, C	3S	'3638											✔	
512 Words × 36 Bits	U, C	3S	'3631											✔	
	B, C	3S	'3632											✔*	
1K Words × 9 Bits	B	3S	'2235											✔	
	U	3S	'7202LA											✔	
			'72221L											✔	
1K Words × 9 Bits × 2	B	3S	'2236											✔	

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First-In, First-Out (FIFO) Memories (continued)

DESCRIPTION		OUTPUT	TYPE	TECHNOLOGY											
SIZE	TYPE†			ABT	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	ALVC
1K Words × 18 Bits	U, C	3S	'7811											✔	
			'7881											✔	
	U	3S	'7801											✔	
			'7802											✔	
1K Words × 36 Bits	U, C	3S	'3641											✔	
2K Words × 9 Bits	U, C	3S	'7807											✔	
	U	3S	'7203L											✔	
			'7808											✔	
			'72231L											✔	
2K Words × 18 Bits	C	3S	'7882											✔	
4K Words × 9 Bits	U	3S	'7204L											✔	
			'72241L											✔	
8K Words × 9 Bits	U	3S	'7205L											✔	
16K Words × 9 Bits	U	3S	'7206L											✔	

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TEXAS INSTRUMENTS

LOGIC OVERVIEW 1

FUNCTIONAL INDEX 2

FUNCTIONAL CROSS-REFERENCE 3

DEVICE SELECTION GUIDE 4

SECTION 3
FUNCTIONAL CROSS-REFERENCE

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'1G00													✔	✔						
'1G04													+	+						
'1GU04													+	+						
'1G08													✔	✔						
'1G14													+	+						
'1G32													✔	✔						
'1G86														+						
'00					✔	✔	✔	✔	✔	✔	✔•	✔*	✔*	✔		✔	✔	✔	✔	
'01								✔		✶										
'02					✔	✔	✔	✔	✔	✶			+	+		✔	✔	✔	✔	
'03					✔			✔	✶							✔				
'04					✔	✔	✔	✔	✔	✔	✔•	✔•	✔	✔		✔	✔	✔	✔	
'U04													✔			✔		✔	✔	
'05					✔			✔	✔	✔						✔				
'06								✔		✔										
'07								✔		✔										
'08					✔	✔	✔	✔	✔		✔•	✔•	✔*	✔		✔	✔	✔	✔	
'09					✔			✔	✔											
'10					✔	✔	✔	✔	✔		✔	✔				✔			✔	
'11					✔	✔	✔	✔	✔		✔	✔				✔				
'14								✔		✔	✔	✔*	✔	✔		✔	✶	✔	✔	
'16										✔										
'17										✔										
'19								✔												
'20					✔	✔	✔	✔	✔							✔				
'21					✔	✔	✔	✔								✔				
'26								✔												
'27					✔	✔	✔	✔		✶						✔				
'30					✔	✔	✔	✔	✔	✔										
'31								✔												

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated
✶ Product available as a military device only * Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'32					✔	✔	✔	✔	✔	✔	✔•	✔•*	✔	✔		✔	✔	✔	✔	
'33					✶			✔												
'35					✔															
'37					✔			✔	✔	✔										
'38					✔		✔	✔	✔	✔										
'42								✔								✔				
'45										✔										
'47								✔		✔										
'51								✔	✔	✶										
'73								✔												
'74					✔	✔	✔	✔	✔	✔	✔•	✔•	✔*	✔		✔	✔	✔	✔	
'75								✔												
'85								✔	✔											
'86					✔	✶	✔	✔	✶	✶	✔•	✔	✔	✔		✔			✔	
'90								✔		✶										
'92								✔		✶										
'93								✔												
'97										✔										
'107								✔		✶										
'109					✔	✔	✔	✔								✔				
'112					✔		✔	✔	✔							✔			✔	
'121										✔										
'122								✔		✶										
'123								✔		✔										
'124									✔											
'125	✔		✔	✔			✔	✔					✔*	✔*		✔	✔	✔	✔	
'126	✔		✔				✔	✔		✶			✔*	✔*		✔			✔	
'128										✔										
'132								✔	✔	✔						✔				
'133					✔				✔											

✔ Product available in technology indicated
• Product available in reduced-noise advanced CMOS (11000 series)
+ New product planned in technology indicated
✶ Product available as a military device only
* Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'136								✔												
'137					✔	✔		✔											+	
'138					✔	✔	✔	✔	✔		•		+	+		✔	✔	✔	✔	
'139					✔			✔	✔		•	•	+	+		✔	✔		+	
'140									✔											
'145								✔		✔										
'148								✔		✔						✔				
'150										✔										
'151					✔	✔	✔	✔	✔							✔				
'153					✔	✔	✔	✔	✔	*						✔				
'154										✔										
'155								✔		*										
'156					✔			✔		✔										
'157					✔	✔	✔	✔	✔	✔			+	+		✔	✔		✔	
'158					✔	✔	✔	✔	✔				+	+					+	
'159										✔										
'161					✔	✔	✔	✔								✔				
'163					✔	✔	✔	✔	✔	*						✔				
'164					✔			✔		*						✔		✔		
'165					✔			✔								✔		✔		
'166					✔			✔		*						✔				
'169					✔	✔	✔	✔	✔											
'173								✔		*										
'174					✔	✔	✔	✔	✔							✔		✔		
'175					✔	✔	✔	✔	✔	✔						✔				
'181						✔		*	*											
'191					✔			✔		*						✔				
'193					✔			✔		✔						✔				
'194						✔		✔	✔											
'195								✔	✔	*						*				

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated
* Product available as a military device only * Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'221								✔		✶										
'224								✔												See FIFO
'230						✔														
'232					✔															See FIFO
'233					✔															See FIFO
'236					✔															See FIFO
'240	✔		✔	✔	✔	✔	✔	✔	✔		✔•	✔•	✔	✔		✔	✔	✔	+	
'241	✔		✔	✔	✔	✔	✔	✔	✔		✔	✔				✔			+	
'243					✔		✔	✔												
'244	✔		✔	✔	✔	✔	✔	✔	✔		✔•	✔•	✔*	✔		✔	✔	✔	✔	+LVCH
'245	✔		✔	✔	✔	✔	✔	✔			✔•*	✔•*	✔*	✔		✔	✔	✔	✔	+LVCH
'247								✔												
'250						✔														
'251					✔		✔	✔	✔	✶						✔				
'253					✔	✔	✔	✔								✔				
'257					✔	✔	✔	✔	✔			•	+	+		✔	✔		✔	
'258					✔	✔	✔	✔					+	+					+	
'259					✔			✔								✔				
'260							✔		✔											
'266								✔								✔				
'273	✔			✔	✔			✔								✔	✔	✔		
'276										✔										
'279								✔		✶										
'280					✔	✔	✔	✔	✔											
'283							✔	✔	✔											
'286						✔						•								
'292								✔												
'294								✔												
'297								✔												
'298						✔		✔		✶										

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated

✶ Product available as a military device only * Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'299					✔		✔	✔	✔											
'321								✔												
'323					✔			✔												
'348								✔												
'353						✔														
'365								✔		✶						✔				
'367								✔		✔						✔				
'368								✔		✔						✔				
'373	✔		✔		✔	✔	✔	✔	✔		✔•	✔•	✔*	✔*		✔	✔	✔	✔	
'374	✔		✔		✔	✔	✔	✔	✔		✔•	✔•	✔*	✔*		✔	✔	✔	✔	
'375								✔												
'376										✔										
'377	✔						✔	✔								✔	✔			
'378								✔												
'379								✔												
'381									✔											
'382								✔												
'390								✔												
'393								✔		✶						✔				
'396								✔												
'399								✔												
'423								✔												
'442								✔												
'465								✔												
'466								✔												
'520					✔															
'521					✔		✔													
'533	✔				✔	✔					✔	✔								
'534	✔				✔						✔	✔				✔				
'540	✔		✔		✔			✔					✔*	✔*		✔	✔		+	

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'541	✔		✔		✔		✔	✔					✔*	✔*		✔	✔		+	
'543	✔		✔	✔			✔												+	
'544																			+	
'561					✔															
'563					✔						✔	✔				✔				
'564					✔						✔	✔								
'568					✔															
'569					✔															
'573	✔		✶	✔	✔	✔	✔				✔	✔	✔*	✔*		✔	✔	✔	✔	
'574	✔		✔	✔	✔	✔	✔				✔	✔	✔*	✔*		✔	✔	✔	✔	
'575					✔	✔														
'576					✔	✔														
'577					✔															
'580					✔															
'590								✔								✔				
'592								✔												
'593								✔												
'594								✔								✔				
'595								✔								✔				
'596								✔												
'597								✔												
'598								✔												
'599								✔												
'620	✔		✶		✔															
'621					✔		✶													
'623	✔		✔		✔		✔	✔								✔	✔			
'624								✔												
'628								✔												
'629								✔												
'638					✔															

✔ Product available in technology indicated
• Product available in reduced-noise advanced CMOS (11000 series)
+ New product planned in technology indicated
✶ Product available as a military device only
* Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'639					✔	✔														
'640	✔		✔		✔	✔		✔								✔				
'641					✔	✔		✔												
'642					✔			✔												
'645					✔	✔		✔								✔	✔			
'646	✔		✔	✔	✔	✔		✔								✔	✔		+	
'647								✔												
'648					✔	✔		✔												
'651	✔				✔	✔														
'652	✔		✔	✔	✔	✔		✔			•	•				✔	✔		+	
'653					✔															
'654					✔															
'656												•								
'657	✔																			
'666					✔															
'667					✔															
'669								✔												
'670								✔												
'673								✔												
'674								✔												
'682								✔								✔				
'684								✔								✔				
'686								✔												
'688					✔			✔								✔				
'697								✔												
'756			✔			✔														
'757						✔														
'760			✔		✔	✔														
'804					✔	✔														
'805					✔	✔														

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated
✳ Product available as a military device only * Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'808						✔														
'821	✔					✔													+	
'823	✔					✔													+	
'825						✔														
'827	✔																		+	
'828																			+	
'832					✔	✔														
'833	✔																			
'841	✔				✔														+	
'842					✔															
'843	✔				✔														+	
'845					✔															
'853	✔																			
'857					✔															
'861	✔																		+	
'863	✔																		+	
'867					✔	✔														
'869					✔	✔														
'870					✔															
'873					✔	✔														
'874					✔	✔														
'876					✔	✔														
'885						✔														
'990					✔															
'992					✔															
'994					✔														+	
'996					✔															
'1000						✔														
'1004					✔	✔														
'1005					✔															

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'1008						✔														
'1016							✔													
'1018							✔													
'1032						✔														
'1034					✔	✔														
'1035					✔															
'1050									✔											
'1051									✔											
'1052									✔											
'1053									✔											
'1056							✔		✔											
'1071												✔								
'1073												✔								
'1244					✔															
'1245					✔															
'1284												✔								
'1640					✔															
'1645					✔															
'1650																				✔FB+
'1651																				✔FB+
'1804						✔														
'1805						✔														
'1808						✔														
'1832						✔														
'2031																				✔FB+
'2032																				✔FB+
'2033																				✔FB+
'2040																				✔FB+
'2041																				✔FB+
'2226												✔								See FIFO

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'2227												✔								See FIFO
'2228												✔								See FIFO
'2229												✔								See FIFO
'2232					✔															See FIFO
'2233					✔															See FIFO
'2235												✔								See FIFO
'2236												✔								See FIFO
'2238					✔															See FIFO
'2240	✔		✔		✔															
'2241	✔																			
'2244	✔		✔				✔												✔	
'2245	✔		✔				✔												+	✔LVCR +LVTR
'2373							✔													
'2541					✔															
'2827	✔		✔																	
'2828			✔																	
'2952	✔			✔															+	
'2953			✔																	
'3125																				✔CBT
'3126																				+CBT
'3244																				✔CBT
'3245																			+	✔CBT
'3251																				+CBT
'3253																				✔CBT
'3257																				✔CBT
'3306																				✔CBT,D,S
'3345																				✔CBT
'3383																				✔CBT
'3384																				✔CBT,D,S
'3386																				+CBT

✔ Product available in technology indicated
✱ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'3611	✔																			See FIFO
'3612	✔																			See FIFO
'3613	✔																			See FIFO
'3614	✔																			See FIFO
'3622												✔								See FIFO
'3631												✔								See FIFO
'3632												✔*								See FIFO
'3638												✔								See FIFO
'3641												✔*								See FIFO
'4020																✔				
'4040																✔				
'4060																✔				
'4066																✔				
'4245																			+	✔LVCC
'4374						✔														
'5400	✔																			
'5401	✔																			
'5402	✔																			
'5403	✔																			
'6800																				✔CBT
'7001																✔				
'7002																✔				
'7032																✔				
'7200L												✔								See FIFO
'7201LA												✔								See FIFO
'7202LA												✔								See FIFO
'7203L												✔								See FIFO
'7204L												✔								See FIFO
'7205L												✔								See FIFO
'7206L												✔								See FIFO

✔ Product available in technology indicated
• Product available in reduced-noise advanced CMOS (11000 series)
+ New product planned in technology indicated
✶ Product available as a military device only
* Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'7801												✔								See FIFO
'7802												✔								See FIFO
'7803												✔			✔					See FIFO
'7804												✔			✔					See FIFO
'7805												✔			✔					See FIFO
'7806												✔			✔					See FIFO
'7807												✔								See FIFO
'7808												✔								See FIFO
'7811												✔								See FIFO
'7813												✔			✔					See FIFO
'7814												✔			✔					See FIFO
'7819	✔																			See FIFO
'7820	✔																			See FIFO
'7881												✔								See FIFO
'7882												✔								See FIFO
'8240	+		✔																	See JTAG
'8244	+		✔																	See JTAG
'8245	✔		✔																	See JTAG
'8373	+		✔																	See JTAG
'8374	+		✔																	See JTAG
'8543	✔																			See JTAG
'8646	✔																			See JTAG
'8652	✔																			See JTAG
'8952	✔																			See JTAG
'8980				+																See JTAG
'8990												✔								See JTAG
'8994												✔								See JTAG
'8996	✔																			See JTAG
'8997												✔								See JTAG
'8999												✔								See JTAG

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'11000											✔									
'11004											✔	✔								
'11008											✔	✔								
'11032											✔	✔								
'11074											✔	✔								
'11086											✔									
'11138											✔									
'11139											✔	✔								
'11240											✔	✔								
'11244											✔	✔								
'11245											✔	✔								
'11257											✔	✔								
'11286												✔								
'11373											✔	✔								
'11374											✔	✔								
'11652											✔	✔								
'16209																				✔CBT
'16211																				✔CBT
'16212																				✔CBT
'16213																				✔CBT
'16214																				✔CBT
'16232																				✔CBT
'16233																				✔CBT
'16240	✔										✔	✔			✔				✔	
'16241	✔											✔			+				+	
'16244	✔	✔		✔							✔	✔			✔				✔	+CBT
'16245	✔	✔		✔							✔	✔			✔				✔	✔ABTE
'16246	✔																			✔ABTE
'16254												✔								
'16260	✔														✔					

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'16268															+					
'16269															✔					
'16270															✔					
'16271															✔					
'16272															+					
'16282															✔					
'16334															+					
'16344															+					
'16373	✔			✔							✔	✔			✔				✔	
'16374	✔			✔							✔	✔			✔				✔	
'16409															✔					
'16460	✔																			
'16470	✔											✔								
'16472											✔									
'16474												✔								
'16475												✔								
'16500	✔			✔											✔					
'16501	✔			✔											✔					
'16524															✔					
'16525															✔					
'16540	✔											✔			+				✔	
'16541	✔											✔			+				✔	
'16543	✔			✔							✔	✔			✔				+	
'16544												✔								
'16600	✔														✔					
'16601	✔														✔					
'16612																				✔GTL
'16616																				✔GTL
'16620											✔	✔								
'16622																				+GTL

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'16623	✔											✔								
'16640	✔										✔	✔								
'16646	✔			✔							✔	✔							+	
'16648												✔								
'16651												✔								
'16652	✔										✔	✔			+				+	
'16657	✔											✔								
'16721															✔					
'16820															✔					
'16821	✔											✔			✔					
'16823	✔										✔	✔			✔					
'16825	✔											✔			✔					
'16827	✔											✔			✔					
'16830															+					
'16831															+					
'16833	✔											✔								
'16835				✔											✔					
'16836															+					
'16837																				+SSTL
'16841	✔											✔			✔					
'16843	✔														+					
'16853	✔																			
'16861												✔								
'16863	✔											✔			✔					
'16864												✔								
'16901															✔					
'16922																				+GTL
'16952	✔			✔*								✔			✔				+	
'18245	✔			+																See JTAG
'18502				+																See JTAG

✔ Product available in technology indicated
• Product available in reduced-noise advanced CMOS (11000 series)
+ New product planned in technology indicated
✶ Product available as a military device only
* Product planned as a military device

DEVICE	BiCMOS				BIPOLAR						CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'18504				✔																See JTAG
'18512				+																See JTAG
'18514				+																See JTAG
'18516				+																See JTAG
'18640	✔			+																See JTAG
'18646				+																See JTAG
'18652				+																See JTAG
'25245	✔		✔																	
'29821			✔		✔															
'29823			✔		✶															
'29827			✔		✔															
'29828					✔															
'29833					✔															
'29834			✔																	
'29841			✔		✔															
'29843			✔																	
'29854			✔																	
'29863			✔		✔															
'32245	✔																			
'32316	✔																			
'32318	✔																			
'32501	✔																			
'32543	✔																			
'72211L												✔								See FIFO
'72221L												✔								See FIFO
'72231L												✔								See FIFO
'72241L												✔								See FIFO
'161284																			+	
'162240															+					
'162244	✔			✔											✔				+	✔LVCR

✔ Product available in technology indicated • Product available in reduced-noise advanced CMOS (11000 series) + New product planned in technology indicated
✶ Product available as a military device only * Product planned as a military device

DEVICE	BiCMOS										CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'162245	✔			✔											✔				+	✔LVCR
'162260	✔														✔					
'162268															✔					
'162269															✔					✔ALVCHR
'162280															✔					
'162282															+					
'162344															✔					
'162373				+																
'162374				+																
'162409															✔					
'162460	✔																			
'162500	✔																			
'162501	✔																			
'162525															✔					
'162540															+					
'162601	✔														✔					
'162721															✔					
'162820															✔					
'162821															+					
'162823	✔																			
'162825	✔																			
'162827	✔														✔					
'162830															✔					
'162831															+					
'162841	+											+								
'164245															✔					
'182245				+																See JTAG
'182502	✔			+																See JTAG
'182504	✔			✔																See JTAG
'182512				+																See JTAG

✔ Product available in technology indicated
• Product available in reduced-noise advanced CMOS (11000 series)
+ New product planned in technology indicated
✶ Product available as a military device only
* Product planned as a military device

DEVICE	BiCMOS										CMOS									OTHER
	ABT	ALB	BCT	LVT	ALS	AS	F	LS	S	TTL	AC	ACT	AHC	AHCT	ALVC	HC	HCT	LV	LVC	
'182514				+																See JTAG
'182516				+																See JTAG
'182640				+																See JTAG
'182646	✔			+																See JTAG
'182652	✔			+																See JTAG

✔ Product available in technology indicated
✶ Product available as a military device only
• Product available in reduced-noise advanced CMOS (11000 series)
* Product planned as a military device
+ New product planned in technology indicated

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SECTION 4
DEVICE SELECTION GUIDE

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Refer to the following for MIL column entries:

military package description and availability

CDIP (ceramic dual-in-line package)
J = 14/16/20 pins
JT = 24/28 pins

CFP (ceramic flat package)
WA = 14 pins (small outline)
W = 14/16/20 pins
WD = 48/56 pins

CPGA (ceramic pin grid array)
GB = 68/84/120 pins

CQFP (ceramic quad flat package)
HV = 68 pins
HT = 84 pins
HS = 100 pins
HFP = 132 pins

LCCC (leadless ceramic chip carrier)
FK = 20/28 pins

schedule

✔ = Now
+ = Planned

ABT
Advanced BiCMOS Technology

The ABT family is TI's second generation family of BiCMOS bus-interface products. It is manufactured using the latest 0.8-μ BiCMOS process and provides high drive up to 64 mA and propagation delays below the 5-ns range, while maintaining very low power consumption. ABT products are well suited for live-insertion applications with an I_{off} specification of 0.1 mA.

To reduce transmission-line effects, the ABT family has series-damping resistor options. Furthermore, there are special ABT parts that provide extremely high-current drive (180 mA) to transmit down to 25-Ω transmission lines. Advanced bus functions, such as universal bus transceivers (UBT™) emulate a wide variety of bus-interface functions. Multiplexing options for memory interleaving and bus upsizing or downsizing also are provided.

The ABT devices can be purchased in octal, Widebus™, or Widebus+™. The Widebus™ and Widebus+™ packages feature higher performance with reduced noise and flow-through pinout for easier board layout. In addition, the Widebus+™ devices have bus-hold circuitry on the inputs to eliminate the need for external pullup resistors for floating inputs.

For ABT data sheets, see the 1994 *Advanced BiCMOS Technology Data Book*, literature number SCBD002B.

DEVICE SELECTION GUIDE

ABT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	TQFP	
SN74ABT125	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔	✔	✔			SCBS182C
SN74ABT126	14	Quad Bus Buffer Gate (OE)		✔	✔	✔	+			SCBS183A
SN74ABT240A	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCBS098G
SN74ABT241A	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCBS184C
SN74ABT244A	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	+		SCBS099H
SN74ABT245B	20	Octal Bus Transceiver	✔	✔	✔	✔	✔	+		SCBS081F
SN74ABTH245	20	Octal Bus Transceiver		✔	✔	✔	✔	+		SCBS663
SN74ABT273	20	Octal D-Type Flip-Flop With Clear	✔	✔	✔	✔	✔			SCBS185A
SN74ABT373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	+			SCBS155B
SN74ABT374A	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCBS111F
SN74ABT377A	20	Octal D-Type Flip-Flop With Clock Enable	✔	✔	✔	✔	✔			SCBS156D
SN74ABT533A	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔			SCBS186C
SN74ABT534A	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCBS187E
SN74ABT540	20	Octal Buffer/Driver		✔	✔	✔				SCBS188B
SN74ABT541B	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCBS093G
SN74ABT543A	24	Octal Registered Bus Transceiver	✔	✔	✔	✔	✔			SCBS157D
SN74ABT573A	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔			SCBS190B
SN74ABT574A	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCBS191B
SN74ABT620	20	Octal Bus Transceiver		✔	✔	✔	+			SCBS113B
SN74ABT623	20	Octal Bus Transceiver	✔	✔	✔	✔	✔			SCBS114B
SN74ABT640	20	Octal Bus Transceiver		✔	✔	✔	✔			SCBS104B
SN74ABT646	24	Octal Registered Bus Transceiver		✔	✔	✔	✔	+		SCBS068E
SN74ABT646A	24	Octal Registered Bus Transceiver	✔	✔	✔	✔	+			SCBS069E
SN74ABT651	24	Octal Registered Bus Transceiver		✔	✔	✔	+			SCBS083C
SN74ABT652	24	Octal Registered Bus Transceiver		✔	✔	✔	+			SCBS070D
SN74ABT652A	24	Octal Registered Bus Transceiver	✔	✔	✔	✔	+			SCBS072D
SN74ABT657A	24	Octal Parity Bus Transceiver		✔	✔	+				SCBS192B
SN74ABT821A	24	10-Bit Bus-Interface Flip-Flop	✔	✔	✔	✔	+			SCBS193C
SN74ABT823	24	9-Bit Bus-Interface Flip-Flop	✔	✔	✔	✔	+			SCBS158C
SN74ABT827	24	10-Bit Buffer/Driver	✔	✔	✔	✔	✔			SCBS159B
SN74ABT833	24	8-Bit to 9-Bit Parity Bus Transceiver		✔	✔					SCBS195B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	TQFP	
SN74ABT841	24	10-Bit Bus-Interface D-Type Latch	✔	✔	✔	✔	+			SCBS196B
SN74ABT841	24	10-Bit Bus-Interface D-Type Latch	✔	✔	✔	✔	+			SCBS196B
SN74ABT843	24	9-Bit Bus-Interface D-Type Latch	✔	✔	✔	✔				SCBS197B
SN74ABT853	24	8-Bit to-9 Bit Parity Bus Transceiver	✔	✔	✔	✔	+			SCBS198C
SN74ABT861	24	10-Bit Bus Transceiver		✔	✔	+				SCBS199A
SN74ABT863	24	9-Bit Bus Transceiver		✔	✔	✔				SCBS201A
SN74ABT2240	20	Octal Buffer and Line/MOS Driver	✔	✔	✔	✔	+			SCBS232B
SN74ABT2241	20	Octal Buffer and Line/MOS Driver		✔	✔	✔	+			SCBS233A
SN74ABT2244A	20	Octal Buffer and Line/MOS Driver	✔	✔	✔	✔	✔			SCBS106C
SN74ABT2245	20	Octal Transceiver and Line/MOS Driver	✔	✔	✔	✔				SCBS234B
SN74ABT2373	20	Octal D-Type Transparent Latch		✔	✔	✔	✔			Call
SN74ABT2827	24	10-Bit Buffer/Driver With Series Resistors		✔	✔					SCBS648
SN74ABT2952A	24	Octal Registered Bus Transceiver		✔	✔	✔	+			SCBS203A
SN74ABT5400A	28	11-Bit Line/Memory Driver			✔					SCBS661
SN74ABT5401	28	11-Bit Line/Memory Driver			✔					SCBS235A
SN74ABT5402A	28	12-Bit Line/Memory Driver			✔					SCBS660
SN74ABT5403	28	12-Bit Line/Memory Driver			✔					SCBS236A
SN74ABT16240	48	16-Bit Buffer/Driver	✔			✔	✔			SCBS095E
SN74ABT16241	48	16-Bit Buffer/Driver	✔			✔	✔			SCBS096E
SN74ABT16244A	48	16-Bit Buffer/Driver	✔			✔	✔	✔		SCBS073E
SN74ABTH16244	48	16-Bit Buffer/Driver				✔	✔	+		SCBS677A
SN74ABT16245A	48	16-Bit Bus Transceiver	✔			✔	✔	✔		SCBS300A
SN74ABTH16245D	48	16-Bit Bus Transceiver				✔	✔	✔		SCBS662D
SN74ABT16260	56	12-to-24 Multiplexed D-Type Latch	✔			✔				SCBS204A
SN74ABT16373A	48	16-Bit D-Type Transparent Latch	✔			✔	✔			SCBS160A
SN74ABT16374A	48	16-Bit D-Type Flip-Flop	✔			✔	✔			SCBS205A
SN74ABTH16374	48	16-Bit D-Type Flip-Flop				+	+			Call
SN74ABT16460	56	4-to-1 Multiplexed/Demultiplexed Transceiver				✔	+			SCBS207B
SN74ABT16470	56	16-Bit Registered Bus Transceiver				✔				SCBS085C
SN74ABT16500B	56	18-Bit Universal Bus Transceiver				✔	✔			SCBS057E
SN74ABT16501	56	18-Bit Universal Bus Transceiver				✔	✔			SCBS086B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

ABT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	TQFP	
SN74ABT16501	56	18-Bit Universal Bus Transceiver				✔	✔			SCBS086B
SN74ABTH16501	56	18-Bit Universal Bus Transceiver				+	+			Call
SN74ABT16540	48	16-Bit Buffer/Driver				✔	✔			SCBS208A
SN74ABT16541	48	16-Bit Buffer/Driver				✔	✔			SCBS118B
SN74ABT16543	56	16-Bit Registered Bus Transceiver	✔			✔	✔			SCBS087B
SN74ABT16600	56	18-Bit Universal Bus Transceiver				✔	✔			SCBS209A
SN74ABT16601	56	18-Bit Universal Bus Transceiver	✔			✔	✔			SCBS210B
SN74ABT16623	48	16-Bit Bus Transceiver				✔				SCBS211A
SN74ABT16640	48	16-Bit Bus Transceiver	✔			✔				SCBS107B
SN74ABT16646	56	16-Bit Registered Bus Transceiver	✔			✔				SCBS212A
SN74ABT16652	56	16-Bit Registered Bus Transceiver	✔			✔				SCBS215A
SN74ABT16657	56	16-Bit Parity Bus Transceiver				✔	✔			SCBS103A
SN74ABT16821	56	20-Bit Bus-Interface Flip-Flop				✔	✔			SCBS216A
SN74ABT16823	56	18-Bit Bus-Interface Flip-Flop	✔			✔	✔			SCBS217B
SN74ABTH16823	56	18-Bit Bus-Interface Flip-Flop				✔	✔	+		SCBS664
SN74ABT16825	56	18-Bit Buffer/Driver				✔	✔			SCBS218A
SN74ABTH16825	56	18-Bit Buffer/Driver				+	+	+		Call
SN74ABT16827A	56	20-Bit Buffer/Driver				+	+			Call
SN74ABT16833	56	Dual 8-Bit to 9-Bit Parity Bus Transceiver				✔				SCBS097C
SN74ABT16841	56	20-Bit Bus-Interface D-Type Latch	✔			✔				SCBS222A
SN74ABT16843	56	18-Bit Bus-Interface D-Type Latch				✔	✔			SCBS223B
SN74ABT16853	56	Dual 8-Bit to 9-Bit Parity Bus Transceiver				✔				SCBS153A
SN74ABT16863	48	18-Bit Bus Transceiver				✔				SCBS225A
SN74ABT16952	56	16-Bit Registered Bus Transceiver	+			✔	✔			SCBS082B
SN74ABT25245	24	25-Ω Octal Bus Transceiver		✔	✔					SCBS251B
SN74ABT32245	100	36-Bit Bus Transceiver	✔						✔	SCBS228C
SN74ABT32316	80	16-Bit Tri-Port Universal Bus Exchanger	✔						✔	SCBS179A
SN74ABT32318	80	18-Bit Tri-Port Universal Bus Exchanger							✔	SCBS180A
SN74ABT32501	100	36-Bit Universal Bus Transceiver	✔						✔	SCBS229B
SN74ABT32543	100	36-Bit Registered Bus Transceiver	✔						✔	SCBS230B
SN74ABT162244	48	16-Bit Buffer/Driver With Series Resistors	✔			✔	✔			SCBS238B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	TQFP	
SN74ABT162245	48	16-Bit Bus Transceiver With Series Resistors	✔			✔	✔			SCBS239C
SN74ABT162260	56	12-Bit to 24-Bit Multiplexed D-Type Latch With Series Resistors				✔				SCBS240A
SN74ABT162460	56	4-to-1 Multiplexed/Demultiplexed Registered Transceiver With Series Resistors				✔				SCBS241A
SN74ABT162500	56	18-Bit Universal Bus Transceiver With Series Resistors				✔	+			SCBS242B
SN74ABT162501	56	18-Bit Universal Bus Transceiver With Series Resistors				✔	✔			SCBS243B
SN74ABT162601	56	18-Bit Universal Bus Transceiver With Series Resistors				✔	✔			SCBS247C
SN74ABT162823	56	18-Bit Bus-Interface Flip-Flop With Series Resistors				✔				SCBS473A
SN74ABT162825	56	18-Bit Buffer/Driver With Series Resistors				✔	+			SCBS474A
SN74ABT162827	56	20-Bit Buffer/Driver With Series Resistors				✔	✔			SCBS248C
SN74ABT162841	56	20-Bit Bus-Interface D-Type Latch With Series Resistors				✔	✔			SCBS665

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

ABT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			IBL	PDIP	SOIC	SSOP	TSSOP	TQFP	
SN74ABT16244	48	16-Bit Bus Transceiver With Series Resistors	✓			✓	✓		SCBS239C
SN74ABT16260	56	12-Bit to 24-Bit Multiplexed D-Type Latch With Series Resistors				✓			SCBS240A
SN74ABT16269	56	4-to-1 Multiplexed/Demultiplexed Registered Transceiver With Series Resistors				✓			SCBS241A
SN74ABT16500	56	18-Bit Universal Bus Transceiver With Series Resistors				✓	+		SCBS242B
SN74ABT16501	56	18-Bit Universal Bus Transceiver With Series Resistors				✓	✓		SCBS243B
SN74ABT16601	56	18-Bit Universal Bus Transceiver With Series Resistors				✓	✓		SCBS244C
SN74ABT16823	56	18-Bit Bus-Interface Flip-Flop With Series Resistors				✓			SCBS473A
SN74ABT16825	56	18-Bit Buffer/Driver With Series Resistors				✓	+		SCBS474A
SN74ABT16827	56	20-Bit Buffer/Driver With Series Resistors				✓	✓		SCBS246C
SN74ABT16841	56	20-Bit Bus-Interface D-Type Latch With Series Resistors				✓	✓		SCBS395

✓ = New
\+ = Planned

ABTE/ETL
Advanced BiCMOS Technology/ Enhanced Transceiver Logic

ABTE has wider noise margins and is backward compatible with existing TTL logic. ABTE devices support the VME64-ETL specification with tight tolerances on skew and transition times. ABTE is manufactured using the latest 0.8-μ BiCMOS process by providing high drive up to 90 mA. Other features include a bias pin and internal pullup resistors on control pins for maximum live-insertion protection. Bus-hold circuitry eliminates external pullup resistors on the inputs and series-damping resistors on the outputs to damp reflections.

For ABTE/ETL data sheets, see the 1997 *GTL, BTL, and ETL Logic Data Book*, literature number SCED004.

ABTE/ETL

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	SSOP	TSSOP	
SN74ABTE16245	48	16-Bit Incident-Wave Switching ETL Bus Transceiver	✔	✔	✔	SCBS226F
SN74ABTE16246	48	11-Bit Incident-Wave Switching ETL Bus-Control Transceiver With 3-State and Open-Collector Outputs		✔	✔	SCBS227D

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

AC/ACT
Advanced CMOS Logic

The ACL family of devices is manufactured in 1-μ CMOS and has more than 70 functions, including gates, flip-flops, drivers, counters, and transceivers. The ACL family is a reliable, low-power logic family with 24-mA output drive.

Included in the family are standard end-pin products and center-pin V_{CC} and ground-configuration products with output-edge control (OEC™) circuitry. The OEC™ circuitry, available only with the center-pin products, helps reduce simultaneous switching noise associated with high-speed logic. Included in the center-pin products are 16-, 18-, and 20-bit bus-interface functions packaged in 48- and 56-pin shrink small-outline packages (SSOP) and thin shrink small-outline packages (TSSOP). These packages allow the designer to double functionality in the same circuit-board area or reduce the circuit-board area by half.

AC devices offer CMOS-compatible inputs and ACT devices offer TTL-compatible inputs.

For AC/ACT data sheets, see the 1997 *AC/ACT CMOS Logic Data Book*, literature number SCAD001D.

DEVICE SELECTION GUIDE

AC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
SN74AC00	14	Quad 2-Input NAND Gate	✔	✔	✔	✔	✔	SCAS524C
SN74AC04	14	Hex Inverter	✔	✔	✔	✔	✔	SCAS519C
SN74AC08	14	Quad 2-Input AND Gate	✔	✔	✔	✔	✔	SCAS536B
SN74AC10	14	Triple 3-Input NAND Gate	✔	✔	✔	✔	✔	SCAS529B
SN74AC11	14	Triple 3-Input AND Gate	✔	✔	✔	✔	✔	SCAS532B
SN74AC14	14	Hex Inverter With Schmitt Trigger	✔	✔	✔	✔	✔	SCAS522C
SN74AC32	14	Quad 2-Input OR Gate	✔	✔	✔	✔	✔	SCAS528B
SN74AC74	14	Dual D-Type Flip-Flop	✔	✔	✔	✔	✔	SCAS521C
SN74AC86	14	Quad 2-Input Exclusive-OR Gate	✔	✔	✔	✔	✔	SCAS533A
SN74AC240	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCAS512C
SN74AC241	20	Octal Buffer/Driver		✔	✔	✔	✔	SCAS513C
SN74AC244	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCAS514C
SN74AC245	20	Octal Bus Transceiver	✔	✔	✔	✔	✔	SCAS461D
SN74AC373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔	SCAS540B
SN74AC374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔	SCAS543B
SN74AC533	20	Octal D-Type Transparent Latch		✔	✔	✔	✔	SCAS555A
SN74AC534	20	Octal D-Type Flip-Flop		✔	✔	✔	✔	SCAS554A
SN74AC563	20	Octal D-Type Transparent Latch		✔	✔	✔	✔	SCAS552A
SN74AC564	20	Octal D-Type Flip-Flop		✔	✔	✔	✔	SCAS551A
SN74AC573	20	Octal D-Type Transparent Latch		✔	✔	✔	✔	SCAS542B
SN74AC574	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔	SCAS541B
74AC11000	16	Quad 2-Input Positive-NAND Gate		✔	✔			SCLS054A
74AC11004	20	Hex Inverter		✔	✔	✔		SCAS033B
74AC11008	16	Quad 2-Input Positive-AND Gate		✔	✔		✔	SCAS014C
74AC11032	14, 16	Quad 2-Input Positive-OR Gate		✔	✔	✔		SCAS007C
74AC11074	14	Dual D-Type Flip-Flop		✔	✔		✔	SCAS499A
74AC11086	16	Quad 2-Input Exclusive-OR Gate		✔	✔			SCAS081A
74AC11138	16	3-to-8 Decoder/Demultiplexer		✔	✔		✔	SCAS042B
74AC11139	16	Dual 2-to-4 Decoder/Demultiplexer		✔	✔		✔	SCAS070B
74AC11240	24	Octal Buffer/Driver		✔	✔	✔		SCAS448A
74AC11244	24	Octal Buffer/Driver		✔	✔	✔	✔	SCAS171A

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
74AC11245	24	Octal Bus Transceiver		✔	✔	✔	✔	SCAS010B
74AC11257	20	Quad 2-to-1 Data Selector/Multiplexer				✔	✔	SCAS049B
74AC11373	24	Octal D-Type Transparent Latch		✔	✔	✔		SCAS213A
74AC11374	24	Octal D-Type Flip-Flop		✔	✔	✔		SCAS214A
74AC11520	20	8-Bit Identity Comparator		✔				SCAS025C
74AC11652	28	Octal Registered Bus Transceiver		✔	✔			SCAS088A
74AC16240	48	16-Bit Buffer/LineDriver				✔		SCAS234B
74AC16244	48	16-Bit Buffer/Driver				✔	✔	SCAS120A
74AC16245	48	16-Bit Bus Transceiver				✔	✔	SCAS235A
74AC16373	48	16-Bit D-Type Transparent Latch				✔		SCAS121B
74AC16374	48	16-Bit D-Type Flip-Flop				✔		SCAS123B
74AC16472	56	16-Bit Latched Bus Transceiver				✔		SCAS165A
74AC16543	56	16-Bit Registered Bus Transceiver				✔		SCAS125B
74AC16620	48	16-Bit Bus Transceiver				✔		SCAS239A
74AC16640	48	16-Bit Bus Transceiver				✔		SCAS240A
74AC16646	56	16-Bit Registered Bus Transceiver				✔		SCAS241A
74AC16652	56	16-Bit Registered Bus Transceiver				✔		SCAS242A
74AC16823	56	18-Bit Bus-Interface Flip-Flop				✔		SCAS243A

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE SELECTION GUIDE

ACT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
SN74ACT00	14	Quad 2-Input NAND Gate	+	✔	✔	✔	✔	SCAS523A
SN74ACT04	14	Hex Inverter	✔	✔	✔	✔	✔	SCAS518A
SN74ACT08	14	Quad 2-Input AND Gate	✔	✔	✔	✔	✔	SCAS535A
SN74ACT10	14	Triple 3-Input NAND Gate	✔	✔	✔	✔	✔	SCAS526A
SN74ACT11	14	Triple 3-Input AND Gate	✔	✔	✔	✔	✔	SCAS531A
SN74ACT14	14	Hex Inverter With Schmitt Trigger	+	✔	✔	✔	✔	SCAS557B
SN74ACT32	14	Quad 2-Input OR Gate	+	✔	✔	✔	✔	SCAS530A
SN74ACT74	14	Dual D-Type Flip-Flop	✔	✔	✔	✔	✔	SCAS520C
SN74ACT86	14	Quad 2-Input Exclusive-OR Gate	✔	✔	✔	✔	✔	SCAS534A
SN74ACT240	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCAS515B
SN74ACT241	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCAS516B
SN74ACT244	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCAS517B
SN74ACT245	20	Octal Bus Transceiver	✔	✔	✔	✔	✔	SCAS452C
SN74ACT373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔	SCAS544B
SN74ACT374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔	SCAS539C
SN74ACT533	20	Octal D-Type Transparent Latch		✔	✔	✔	✔	SCAS553A
SN74ACT534	20	Octal D-Type Flip-Flop		✔	✔	✔	✔	SCAS556A
SN74ACT563	20	Octal D-Type Transparent Latch		✔	✔	✔	✔	SCAS550A
SN74ACT564	20	Octal D-Type Flip-Flop		✔	✔	✔	✔	SCAS549A
SN74ACT573	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔	SCAS538B
SN74ACT574	20	Octal D-Type Flip-Flop		✔	✔	✔	✔	SCAS537A
SN74ACT1284	20	7-Bit IEEE P1284 Driver/Receiver			✔	✔		SCAS459B
74ACT11004	20	Hex Inverter		✔	✔	✔	+	SCAS215A
74ACT11008	16	Quad 2-Input Positive-AND Gate		✔	✔		✔	SCAS013C
74ACT11032	14, 16	Quad 2-Input Positive-OR Gate		✔	✔	✔	✔	SCAS008C
74ACT11074	14	Dual D-Type Flip-Flop		✔	✔	✔		SCAS046A
74ACT11139	16	Dual 2-to-4 Decoder/Demultiplexer		✔	✔		✔	SCAS175A
74ACT11240	24	Octal Buffer/Driver		✔	✔	✔		SCAS210A
74ACT11244	24	Octal Buffer/Driver		✔	✔	✔	✔	SCAS006C
74ACT11245	24	Octal Bus Transceiver		✔	✔	✔	✔	SCAS031C
74ACT11257	20	Quad 2-to-1 Data Selector/Multiplexer		✔	✔	✔		SCAS053B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
74ACT11286	14	9-Bit Parity Generator/Checker		✔	✔			SCAS069B
74ACT11373	24	Octal D-Type Transparent Latch		✔	✔	✔		SCAS015B
74ACT11374	24	Octal D-Type Flip-Flop		✔	✔	✔		SCAS217A
74ACT11652	28	Octal Registered Bus Transceiver			✔			SCAS087A
74ACT11656	28	Octal Parity Bus Transceiver			✔			SCAS460A
74ACT16240	48	16-Bit Buffer/Driver	✔			✔		SCAS137C
74ACT16241	48	16-Bit Buffer/Driver				✔		SCAS189A
74ACT16244	48	16-Bit Buffer/Driver	✔			✔	✔	SCAS116B
74ACT16245	48	16-Bit Bus Transceiver	✔			✔	✔	SCAS097B
74ACT16254	64	32-to-16 VL Bus Multiplexer/Demultiplexer					✔	SCAS527A
74ACT16373	48	16-Bit D-Type Transparent Latch	✔			✔		SCAS122C
74ACT16374	48	16-Bit D-Type Flip-Flop	✔			✔		SCAS124B
74ACT16470	56	16-Bit Registered Bus Transceiver				✔		SCAS237A
74ACT16474	56	18-Bit Registered Bus Transceiver				✔		SCAS238A
74ACT16475	56	16-Bit Registered Transceiver				✔		SCAS198A
74ACT16540	48	16-Bit Buffer/Driver				✔		SCAS186A
74ACT16541	48	16-Bit Buffer/Driver				✔		SCAS208A
74ACT16543	56	16-Bit Registered Bus Transceiver	✔			✔	✔	SCAS126B
74ACT16544	56	16-Bit Registered Bus Transceiver				✔		SCAS161A
74ACT16620	48	16-Bit Bus Transceiver				✔		SCAS184A
74ACT16623	48	16-Bit Bus Transceiver				✔		SCAS152A
74ACT16640	48	16-Bit Bus Transceiver				✔		SCAS173A
74ACT16646	56	16-Bit Registered Bus Transceiver				✔		SCAS127B
74ACT16648	56	16-Bit Registered Bus Transceiver				✔		SCAS188A
74ACT16651	56	16-Bit Registered Bus Transceiver				✔		SCAS449A
74ACT16652	56	16-Bit Registered Bus Transceiver	✔			✔		SCAS128C
74ACT16657	56	Dual 8-to-9 Bit Parity Bus Transceiver				✔		SCAS164A
74ACT16821	56	20-Bit Bus-Interface Flip-Flop				✔		SCAS176A
74ACT16823	56	18-Bit Bus-Interface Flip-Flop				✔		SCAS160A
74ACT16825	56	18-Bit Buffer/Driver				✔		SCAS155B
74ACT16827	56	20-Bit Buffer/Driver				✔		SCAS163A

commercial package description and availability

PDIP (plastic dual-in-line package)
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QFP (plastic quad flat package)
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PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE SELECTION GUIDE

ACT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
74ACT16833	56	Dual 8-to-9 Bit Parity Bus Transceiver				✔		SCAS166A
74ACT16841	56	20-Bit Bus-Interface D-Type Latch				✔	✔	SCAS174A
74ACT16861	56	20-Bit Bus Transceiver				✔		SCAS197B
74ACT16863	56	18-Bit Bus Transceiver				✔		SCAS162B
74ACT16864	56	18-Bit Bus Transceiver				✔		SCAS244A
74ACT16952	56	16-Bit Registered Bus Transceiver				✔		SCAS159C
74ACT162841	56	20-Bit Bus-Interface D-Type Latch With Series Resistors				+		Call

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
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schedule
✔ = Now
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MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

AHC/AHCT Advanced High-Speed CMOS Logic

The AHC/AHCT logic family provides a natural migration for HCMOS users who need more speed for low-power, low-noise, and low-drive applications. The AHC logic family consists of basic gates, medium-scale integrated circuits, and octal functions fabricated using the EPIC1-S process that produces high performance at low cost. In addition, TI offers a new single-gate solution in its MicroGate family, designated with 1G in the device name.

Performance characteristics of the AHC family are:

- Speed – With typical propagation delays of 5.2 ns (octals), which is about three times faster than HC devices, AHC devices are the quick and quiet solution for higher-speed operation.
- Low noise – The AHC family allows designers to combine the low-noise characteristics of HCMOS devices with today's performance levels without the overshoot/undershoot problems typical of higher-drive devices usually required to get AHC speeds.
- Low power – The AHC family, by using CMOS technology, exhibits low power consumption (40-μA maximum static current, half that of HCMOS).
- Drive – Output-drive current is ±8 mA at 5-V V_{CC} and ±4 mA at 3.3-V V_{CC}.
- Packaging – AHC devices are available in D and DW (SOIC), DB (SSOP), N (PDIP), and PW (TSSOP) packages, and planned in the DGV (TVSOP). Selected AHC devices are available in military versions (SN54AHCXX).

Using TI products offers several business advantages:

- Competitive advantage – AHC and VHC devices have equivalent specifications; therefore, AHC devices are "drop in" replaceable. With TI's production capacity, delivery performance, and competitive prices, AHC devices are among the most economical, easy-to-use, and easy-to-get logic products.
- Alternate source – TI has arrangements for one or more alternate sources for AHC devices.

For AHC/AHCT data sheets, see the 1996 *AHC/AHCT, HC/HCT, and LV CMOS Logic Data Book*, literature number SCLD004.

DEVICE SELECTION GUIDE

AHC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	SOT	
SN74AHC1G00	5	Single 2-Input Positive-NAND Gate							✔	SCLS313A
SN74AHC1G04	5	Single Inverter Gate							✔	SCLS318B
SN74AHC1GU04	5	Unbuffered Single Inverter Gate							✔	SCLS343D
SN74AHC1G08	5	Single 2-Input Positive-AND Gate							✔	SCLS314A
SN74AHC1G14	5	Single Schmitt-Trigger Inverter Gate							+	SCLS321B
SN74AHC1G32	5	Single 2-Input Positive-OR Gate							✔	SCLS317A
SN74AHC1G86	5	Single 2-Input Exclusive-OR Gate							+	SCLS323B
SN74AHC00	14	Quad 2-Input NAND Gate	+	✔	✔	✔	✔	✔		SCLS227A
SN74AHC02	14	Quad 2-Input NOR Gate		✔	✔	✔	✔	✔		SCLS254C
SN74AHC04	14	Hex Inverter	✔	✔	✔	✔	✔	✔		SCLS231C
SN74AHCU04	14	Unbuffered Hex Inverter	✔	✔	✔	✔	✔	✔		SCLS234A
SN74AHC08	14	Quad 2-Input AND Gate	+	✔	✔	✔	✔			SCLS236A
SN74AHC14	14	Hex Inverter With Schmitt Trigger	✔	✔	✔	✔	✔			SCLS238B
SN74AHC32	14	Quad 2-Input OR Gate	✔	✔	✔	✔	✔	✔		SCLS247A
SN74AHC74	14	Dual D-Type Flip-Flop With Preset and Clear	✔	✔	✔	✔	✔			SCLS255B
SN74AHC86	14	Quad Exclusive-OR Gate	✔	✔	✔	✔	✔			SCLS249A
SN74AHC125	14	Quad Bus Buffer Gate ($\overline{OE}$)	+	✔	✔	✔	✔			SCLS256B
SN74AHC126	14	Quad Bus Buffer Gate (OE)	✔	✔	✔	✔	✔			SCLS257B
SN74AHC138	16	3-to-8 Decoder/Demultiplexer		✔	✔	✔	✔	✔		SCLS258C
SN74AHC139	16	Dual 2-to-4 Line Decoder/Demultiplexer		✔	✔	✔	✔	✔		SCLS259C
SN74AHC157	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS345
SN74AHC158	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS346
SN74AHC240	20	Octal Bus Buffer/Driver	✔	✔	✔	✔	✔			SCLS251A
SN74AHC244	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	✔		SCLS226C
SN74AHC245	20	Octal Bus Transceiver	✔	✔	✔	✔	✔	✔		SCLS230B
SN74AHC257	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS349
SN74AHC258	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS350
SN74AHC373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔			SCLS235B
SN74AHC374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCLS240B
SN74AHC540	20	Inverting Octal Bus Buffer	✔	✔	✔	✔	✔			SCLS260C
SN74AHC541	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCLS261F

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	SOT	LITERATURE REFERENCE
SN74AHC573	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔			SCLS242E
SN74AHC574	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCLS244B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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QFP (plastic quad flat package)
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SOIC (small-outline integrated circuit)
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SOT (small-outline transistor)
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DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE SELECTION GUIDE

AHCT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	TVSOP	SOT	
SN74AHCT1G00	5	Single 2-Input Positive-NAND Gate							✔	SCLS316B
SN74AHCT1G04	5	Single Inverter Gate							+	SCLS319C
SN74AHCT1G08	5	Single 2-Input Positive-AND Gate							✔	SCLS315B
SN74AHCT1G14	5	Single Schmitt-Trigger Inverter Gate							+	SCLS322C
SN74AHCT1G32	5	Single 2-Input Positive-OR Gate							✔	SCLS320B
SN74AHCT1G86	5	Single 2-Input Exclusive-OR Gate							+	SCLS324B
SN74AHCT00	14	Quad 2-Input NAND Gate	✔	✔	✔	✔	✔	+		SCLS229B
SN74AHCT02	14	Quad 2-Input NOR Gate		+	+	+	+			SCLS262C
SN74AHCT04	14	Hex Inverter	✔	✔	✔	✔	✔	+		SCLS232D
SN74AHCT08	14	Quad 2-Input AND Gate	✔	✔	✔	✔	✔			SCLS237B
SN74AHCT14	14	Hex Inverter With Schmitt Trigger	✔	✔	✔	✔	✔			SCLS246D
SN74AHCT32	14	Quad 2-Input OR Gate	✔	✔	✔	✔	✔	+		SCLS248B
SN74AHCT74	14	Dual D-Type Flip-Flop With Preset and Clear	✔	✔	✔	✔	✔			SCLS263C
SN74AHCT86	14	Quad Exclusive-OR Gate	✔	✔	✔	✔	✔			SCLS250C
SN74AHCT125	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔	✔	✔			SCLS264D
SN74AHCT126	14	Quad Bus Buffer Gate (OE)	✔	✔	✔	✔	✔			SCLS265E
SN74AHCT138	16	3-to-8 Decoder/Demultiplexer		+	+	+	+			SCLS266C
SN74AHCT139	16	Dual 2-to-4 Line Decoder/Demultiplexer		+	+	+	+			SCLS267D
SN74AHCT157	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS347B
SN74AHCT158	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS348B
SN74AHCT240	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCLS252B
SN74AHCT244	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	+		SCLS228C
SN74AHCT245	20	Octal Bus Transceiver	+	✔	✔	✔	✔	+		SCLS233C
SN74AHCT257	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS351A
SN74AHCT258	16	Quad 2-to-1 Data Selector/Multiplexer		+	+	+	+			SCLS344A
SN74AHCT373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔			SCLS239D
SN74AHCT374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCLS241C
SN74AHCT540	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCLS268C
SN74AHCT541	20	Octal Buffer/Driver	✔	✔	✔	✔	✔			SCLS269F
SN74AHCT573	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔			SCLS243E
SN74AHCT574	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔			SCLS245C

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule

✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

ALB
Advanced Low-Voltage BiCMOS

The specially designed 3.3-V ALB family uses the latest 0.6-μ BiCMOS technology for bus-interface functions. In addition, ALB provides 25-mA drive at 3.3 V with maximum propagation delays of 2.2 ns, making it TI's fastest logic family to date. The inputs have clamping diodes to eliminate overshoot and undershoot.

The ALB family is currently available in a limited number of functions with Widebus™ and shrink-Widebus™ footprints with advanced packaging options such as shrink small-outline package (SSOP), thin shrink small-outline package (TSSOP), and planned for thin very small-outline package (TVSOP).

DEVICE SELECTION GUIDE

ALB

DEVICE	NO. PINS	FUNCTION	AVAILABILITY SSOP	AVAILABILITY TSSOP	AVAILABILITY TVSOP	LITERATURE REFERENCE
SN74ALB16244	48	16-Bit Buffer/Driver	✔	✔	✔	SCBS647A
SN74ALB16245	48	16-Bit Bus Transceiver	✔	✔	✔	SCBS678

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

ALS
Advanced Low-Power Schottky Logic

The ALS family provides a full spectrum of over 130 bipolar logic functions.

This family, combined with the AS family, can be used to optimize systems through performance budgeting. By using AS in speed-critical paths and ALS where speed is less critical, designers can optimize speed and power performance.

The ALS family includes gates, flip-flops, counters, drivers, transceivers, registered transceivers, readback latches, clock drivers, register files, and multiplexers.

For ALS data sheets, see the 1995 *ALS/AS Logic Data Book*, literature number SDAD001C.

DEVICE SELECTION GUIDE

ALS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74ALS00A	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SDAS187A
SN74ALS02A	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔		SDAS111B
SN74ALS03B	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SDAS013B
SN74ALS04B	14	Hex Inverter	✔	✔	✔	✔	SDAS063B
SN74ALS05A	14	Hex Inverter With Open-Collector Outputs	✔	✔	✔	✔	SDAS190A
SN74ALS08	14	Quad 2-Input Positive-AND Gate	✔	✔	✔		SDAS191A
SN74ALS09	14	Quad 2-Input Positive-AND Gate With Open-Collector Outputs	✔	✔	✔		SDAS084B
SN74ALS10A	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔		SDAS002B
SN74ALS11A	14	Triple 3-Input Positive-AND Gate	✔	✔	✔		SDAS009C
SN74ALS20A	14	Dual 4-Input Positive-NAND Gate	✔	✔	✔		SDAS192B
SN74ALS21A	14	Dual 4-Input Positive-AND Gate	✔	✔	✔		SDAS085B
SN74ALS27A	14	Triple 3-Input Positive-NOR Gate	✔	✔	✔		SDAS112B
SN74ALS30A	14	8-Input Positive-NAND Gate	✔	✔	✔		SDAS010B
SN74ALS32	14	Quad 2-Input Positive-OR Gate	✔	✔	✔		SDAS113B
SN74ALS35A	14	Hex Noninverter With Open-Collector Outputs		✔	✔		SDAS011C
SN74ALS37A	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SDAS195A
SN74ALS38B	14	Quad 2-Input Postive-NAND Gate With Open-Collector Outputs	✔	✔	✔		SDAS196B
SN74ALS74A	14	Dual D-Type Flip-Flop With Clear and Preset	✔	✔	✔		SDAS143C
SN74ALS86	14	Quad 2-Input Exclusive-OR Gate	✔	✔	✔		SDAS006B
SN74ALS109A	16	Dual J-$\overline{K}$ Positive-Edge-Triggered Flip-Flop	✔	✔	✔		SDAS198B
SN74ALS112A	16	Dual J-K Negative-Edge-Triggered Flip-Flop	✔	✔	✔		SDAS199A
SN74ALS133	16	13-Input Positive-NAND Gate	✔	✔	✔		SDAS202B
SN74ALS137A	16	3-to-8 Decoder/Demultiplexer With Address Registers	✔	✔	✔		SDAS203C
SN74ALS138A	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔		SDAS055E
SN74ALS139	16	Dual 2-to-4 Decoder/Demultiplexer	✔	✔	✔		SDAS204A
SN74ALS151	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS205A
SN74ALS153	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS206A
SN74ALS156	16	Dual 2-to-4 Decoder/Demultiplexer With Open-Collector Outputs		✔	✔		SDAS099C
SN74ALS157A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS081C
SN74ALS158	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS081C
SN74ALS161B	16	4-Bit Synchronous Binary Counter	✔	✔	✔		SDAS024A

commercial package description and availability

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schedule
✔ = Now
+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74ALS163B	16	4-Bit Synchronous Binary Counter	✔	✔	✔		SDAS024A
SN74ALS164A	14	8-Bit Parallel-Out Serial Shift Register		✔	✔		SDAS159D
SN74ALS165	16	8-Bit Parallel-In Shift Register	✔	✔	✔		SDAS157B
SN74ALS166	16	8-Bit Parallel-In Shift Register		✔	✔		SDAS156C
SN74ALS169B	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔		SDAS125B
SN74ALS174	16	Hex D-Type Flip-Flop With Clear	✔	✔	✔		SDAS207D
SN74ALS175	16	Quad D-Type Flip-Flop With Clear	✔	✔	✔		SDAS207D
SN74ALS191A	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔		SDAS210C
SN74ALS193A	16	4-Bit Synchronous Up/Down Binary Counter With Dual Clock and Clear	✔	✔	✔		SDAS211C
SN74ALS240A	20	Octal Buffer/Driver	✔	✔	✔		SDAS214C
SN74ALS240A-1	20	Octal Buffer/Driver		✔	✔		SDAS214C
SN74ALS241C	20	Octal Buffer/Driver	✔	✔	✔		SDAS153E
SN74ALS241C-1	20	Octal Buffer/Driver		✔	✔		SDAS153E
SN74ALS243A	14	Quad Bus Transceiver	✔	✔	✔		SDAS069B
SN74ALS244C	20	Octal Buffer/Driver	✔	✔	✔	✔	SDAS142C
SN74ALS244C-1	20	Octal Buffer/Driver		✔	✔		SDAS142C
SN74ALS245A	20	Octal Bus Transceiver	✔	✔	✔	✔	SDAS272
SN74ALS245A-1	20	Octal Bus Transceiver		✔	✔		SDAS272
SN74ALS251	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS215A
SN74ALS253	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS216A
SN74ALS257A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS124C
SN74ALS258A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDAS124C
SN74ALS259	16	8-Bit Addressable Latch	✔	✔	✔		SDAS217A
SN74ALS273	20	Octal D-Type Flip-Flop With Clear	✔	✔	✔		SDAS218A
SN74ALS280	14	9-Bit Parity Generator/Checker		✔	✔		SDAS038C
SN74ALS299	20	8-Bit Universal Shift/Storage Register	✔	✔	✔		SDAS220B
SN74ALS323	20	8-Bit Universal Shift/Storage Register	✔	✔	✔		SDAS267A
SN74ALS373A	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	SDAS083B
SN74ALS374A	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	SDAS167B
SN74ALS520	20	8-Bit Identity Comparator	✔	✔	✔		SDAS224B
SN74ALS521	20	8-Bit Identity Comparator		✔	✔		SDAS224B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule

✔ = Now
-/- = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

DEVICE SELECTION GUIDE

ALS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74ALS533A	20	Octal D-Type Transparent Latch		✔	✔		SDAS270
SN74ALS534A	20	Octal D-Type Flip-Flop	✔	✔	✔		SDAS168B
SN74ALS540	20	Octal Buffer/Driver		✔	✔		SDAS025C
SN74ALS540-1	20	Octal Buffer/Driver		✔	✔		SDAS025C
SN74ALS541	20	Octal Buffer/Driver	✔	✔	✔		SDAS025C
SN74ALS541-1	20	Octal Buffer/Driver		✔	✔		SDAS025C
SN74ALS561A	20	4-Bit Synchronous Binary Counter	✔	✔	✔		SDAS125B
SN74ALS563B	20	Octal D-Type Transparent Latch	✔	✔	✔		SDAS163A
SN74ALS564B	20	Octal D-Type Flip-Flop	✔	✔	✔		SDAS164B
SN74ALS568A	20	4-Bit Synchronous Up/Down Decade Counter		✔			SDAS229A
SN74ALS569A	20	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔		SDAS229A
SN74ALS573C	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	SDAS048D
SN74ALS574B	20	Octal D-Type Flip-Flop	✔	✔	✔		SDAS165B
SN74ALS575A	24	Octal D-Type Flip-Flop		✔	✔		SDAS165B
SN74ALS576B	20	Octal D-Type Flip-Flop	✔	✔	✔		SDAS065B
SN74ALS577A	24	Octal D-Type Flip-Flop		✔	✔		SDAS065B
SN74ALS580B	20	Octal D-Type Transparent Latch	✔	✔	✔		SDAS048D
SN74ALS620A	20	Octal Bus Transceiver		✔	✔		SDAS226A
SN74ALS621A	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDAS226A
SN74ALS621A-1	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDAS226A
SN74ALS623A	20	Octal Bus Transceiver		✔	✔		SDAS226A
SN74ALS638A-1	20	Octal Bus Transceiver		✔	✔		SDAS123A
SN74ALS639A	20	Octal Bus Transceiver		✔	✔		SDAS123A
SN74ALS640B	20	Octal Bus Transceiver	✔	✔	✔		SDAS122A
SN74ALS640B-1	20	Octal Bus Transceiver		✔	✔		SDAS122A
SN74ALS641A	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDAS300
SN74ALS641A-1	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDAS300
SN74ALS642A-1	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDAS300
SN74ALS645A	20	Octal Bus Transceiver	✔	✔	✔		SDAS278
SN74ALS645A-1	20	Octal Bus Transceiver		✔	✔		SDAS278
SN74ALS646A	24	Octal Registered Bus Transceiver	✔	✔	✔		SDAS039F

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74ALS646A-1	24	Octal Registered Bus Transceiver		✔	✔		SDAS039F
SN74ALS648A	24	Octal Registered Bus Transceiver	✔	✔	✔		SDAS039F
SN74ALS651A	24	Octal Registered Bus Transceiver		✔	✔		SDAS066F
SN74ALS651A-1	24	Octal Registered Bus Transceiver		✔	✔		SDAS066F
SN74ALS652A	24	Octal Registered Bus Transceiver	✔	✔	✔		SDAS066F
SN74ALS652A-1	24	Octal Registered Bus Transceiver		✔	✔		SDAS066F
SN74ALS653	24	Octal Registered Bus Transceiver	✔	✔	✔		SDAS066F
SN74ALS654	24	Octal Registered Bus Transceiver		✔	✔		SDAS066F
SN74ALS666	24	8-Bit D-Type Transparent Readback Latch		✔	✔		SDAS227A
SN74ALS667	24	8-Bit D-Type Transparent Readback Latch		✔	✔		SDAS227A
SN74ALS688	20	8-Bit Identity Comparator	✔	✔	✔		SDAS228A
SN74ALS760	20	Octal Buffer/Driver With Open-Collector Outputs		✔	✔		SDAS141A
SN74ALS804A	20	Hex 2-Input NAND Gate	✔	✔	✔		SDAS022C
SN74ALS805A	20	Hex 2-Input NOR Gate	✔	✔	✔		SDAS023C
SN74ALS832A	20	Hex 2-Input Positive-OR Gate	✔	✔	✔		SDAS017C
SN74ALS841	24	10-Bit Bus-Interface D-Type Latch		✔	✔		SDAS059C
SN74ALS842	24	10-Bit Bus-Interface D-Type Latch		✔	✔		SDAS059C
SN74ALS843	24	9-Bit Bus-Interface D-Type Latch		✔	✔		SDAS232A
SN74ALS845	24	8-Bit Bus-Interface D-Type Latch		✔	✔		SDAS233A
SN74ALS857	24	Hex 2-to-1 Universal Multiplexer	✔	✔	✔		SDAS170A
SN74ALS867A	24	8-Bit Synchronous Up/Down Binary Counter		✔	✔		SDAS115C
SN74ALS869	24	8-Bit Synchronous Up/Down Binary Counter		✔	✔		SDAS115C
SN74ALS870	24	Dual 16 × 4 Register File	✔	✔	✔		SDAS139A
SN74ALS873B	24	Dual 4-Bit D-Type Latch	✔	✔	✔		SDAS036D
SN74ALS874B	24	Dual 4-Bit D-Type Edge-Triggered Flip-Flop	✔	✔	✔		SDAS061C
SN74ALS876A	24	Dual 4-Bit D-Type Edge-Triggered Flip-Flop		✔	✔		SDAS061C
SN74ALS990	20	8-Bit D-Type Transparent Readback Latch		✔	✔		SDAS027B
SN74ALS992	24	9-Bit D-Type Transparent Readback Latch		✔	✔		SDAS028B
SN74ALS994	24	10-Bit D-Type Transparent Readback Latch		✔	✔		SDAS237A
SN74ALS996	24	8-Bit D-Type Edge-Triggered Readback Latch	✔	✔	✔		SDAS098B
SN74ALS996-1	24	8-Bit D-Type Edge-Triggered Readback Latch		✔	✔		SDAS098B

commercial package description and availability

PDIP (plastic dual-in-line package)
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QFP (plastic quad flat package)
RC = 52 pins
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SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
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SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule

✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE SELECTION GUIDE

ALS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74ALS1004	14	Hex Inverting Buffer		✔	✔		SDAS074B
SN74ALS1005	14	Hex Inverting Buffer With Open-Collector Outputs	✔	✔	✔		SDAS240A
SN74ALS1034	14	Hex Noninverting Buffer	✔	✔	✔		SDAS053B
SN74ALS1035	14	Hex Noninverting Buffer With Open-Collector Outputs	✔	✔	✔		SDAS243A
SN74ALS1244A	20	Octal Buffer/Driver	✔	✔	✔		SDAS186B
SN74ALS1245A	20	Octal Bus Transceiver	✔	✔	✔		SDAS245A
SN74ALS1640A	20	Octal Bus Transceiver		✔			SDAS246A
SN74ALS1645A	20	Octal Bus Transceiver		✔	✔		SDAS246A
SN74ALS2240	20	Octal Buffer/Driver With Series Resistors		✔	✔		SDAS268
SN74ALS2541	20	Octal Buffer/Driver With Series Resistors		✔	✔		SDAS273
SN74ALS29821	24	10-Bit Bus-Interface Flip-Flop	✔	✔	✔		SDAS145B
SN74ALS29827	24	10-Bit Buffer/Driver		✔	✔		SDAS095B
SN74ALS29828	24	10-Bit Buffer/Driver		✔	✔		SDAS095B
SN74ALS29833	24	8-Bit to 9-Bit Parity Bus Transceiver		✔	✔		SDAS119D
SN74ALS29841	24	10-Bit D-Type Bus-Interface Latch		✔	✔		SDAS149A
SN74ALS29863	24	9-Bit Bus Transceiver		✔	✔		SDAS096C

commercial package description and availability

PDIP (plastic dual-in-line package)
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PLCC (plastic leaded chip carrier)
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QFP (plastic quad flat package)
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PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

ALVC
Advanced Low-Voltage CMOS Technology

One of the highest performance 3.3-V bus-interface families is the ALVC family. These specially designed 3-V products are processed in 0.6-μ CMOS technology, giving typical propagation delays less than 3 ns, along with current drive of 24 mA and static power consumption of 40 μA for bus-interface functions. The ALVC devices have bus-hold cells on inputs to eliminate the need for external pullup resistors for floating inputs. The family also includes innovative functions for memory interleaving, multiplexing, and interfacing to synchronous DRAMs.

The ALVC family is offered in the Widebus™ footprints with all of the advanced packaging such as shrink small-outline package (SSOP) and thin shrink small-outline package (TSSOP).

For ALVC data sheets, see the 1996 *Low-Voltage Logic Data Book*, literature number SCBD003B, and the 1997 *High-Speed Memory Interface Logic Data Book*, literature number SCED001.

DEVICE SELECTION GUIDE

ALVC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			SSOP	TSSOP	TVSOP	
SN74ALVC16244A	48	16-Bit Buffer/Driver	✔	✔		SCAS250D
SN74ALVC164245	48	16-Bit Transceiver and 3.3-V to 5-V Shifter	✔	✔		SCAS416A
SN74ALVCH16240	48	16-Bit Buffer/Driver	✔	✔		SCES045A
SN74ALVCH16241	48	16-Bit Buffer/Driver	+	+		Call
SN74ALVCH16244	48	16-Bit Buffer/Driver	✔	✔	+	SCES014
SN74ALVCH16245	48	16-Bit Bus Transceiver	✔	✔	✔	SCES015
SN74ALVCH16260	56	12-to-24 Multiplexed D-Type Latch	✔	✔		SCES046
SN74ALVCH16268	56	12-to-24 Registered Bus Exchanger	+	+		Call
SN74ALVCH16269	56	12-to-24 Registered Bus Exchanger	✔	✔		SCES019A
SN74ALVCH16270	56	12-to-24 Registered Bus Exchanger	✔	✔		SCES028A
SN74ALVCH16271	56	12-to-24 Multiplexed Bus Exchanger	✔	✔		SCES017A
SN74ALVCH16272	56	12-to-24 Multiplexed Bus Exchanger	+	+		SCES057A
SN74ALVCH16282	80	18-to-36 Registered Bus Exchanger			✔	SCES036A
SN74ALVCH16334	48	16-Bit Universal Bus Driver	+	+		SCES090
SN74ALVCH16344	56	1-to-4 Address Driver	✔	✔		SCES054B
SN74ALVCH16373	48	16-Bit D-Type Transparent Latch	✔	✔		SCES020A
SN74ALVCH16374	48	16-Bit D-Type Flip-Flop	✔	✔		SCES021A
SN74ALVCH16409	56	9-Bit, 4-Port Universal Bus Exchanger	✔	✔		SCES022A
SN74ALVCH16500	56	18-Bit Universal Bus Transceiver	✔	✔		SCES023C
SN74ALVCH16501	56	18-Bit Universal Bus Transceiver	✔	✔		SCES024A
SN74ALVCH16524	56	18-Bit Registered Bus Transceiver	✔	✔		SCES080
SN74ALVCH16525	56	18-Bit Registered Bus Transceiver	✔	✔		SCES059A
SN74ALVCH16540	48	16-Bit Buffer/Driver	+	+		SCES029
SN74ALVCH16541	48	16-Bit Buffer/Driver	+	+		SCES031
SN74ALVCH16543	56	16-Bit Registered Bus Transceiver	✔	✔		SCES025A
SN74ALVCH16600	56	18-Bit Universal Bus Transceiver	✔	✔		SCES030A
SN74ALVCH16601	56	18-Bit Universal Bus Transceiver	✔	✔		SCES027A
SN74ALVCH16646	56	16-Bit Registered Bus Transceiver	✔	✔		SCES032A
SN74ALVCH16652	56	16-Bit Bus Transceiver and Register	+	+		SCES034
SN74ALVCH16721	56	20-Bit Bus-Interface Flip-Flop	✔	✔	+	SCES052A
SN74ALVCH16820	56	10-Bit Bus-Interface Flip-Flop	✔	✔		SCES035A

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

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DB = 14/16/20/24/28/30/38 pins
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SOT (small-outline transistor)
DBV = 5 pins

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PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

schedule

✔ = Now
\+ = Planned

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY SSOP	AVAILABILITY TSSOP	AVAILABILITY TVSOP	LITERATURE REFERENCE
SN74ALVCH16821	56	20-Bit Bus-Interface Flip-Flop	✔	✔	+	SCES037A
SN74ALVCH16823	56	18-Bit Bus-Interface Flip-Flop	✔	✔		SCES038A
SN74ALVCH16825	56	18-Bit Buffer/Driver	✔	✔		SCES039A
SN74ALVCH16827	56	20-Bit Buffer/Driver	✔	✔	+	SCES041A
SN74ALVCH16830	80	1-to-2 Address Driver			+	SCES081
SN74ALVCH16831	80	1-to-4 Address Driver			+	SCES083
SN74ALVCH16835	56	18-Bit DFF Memory Buffer	✔	✔		SCES053A
SN74ALVCH16836	56	20-Bit Universal Bus Driver	+	+		SCES089
SN74ALVCH16841	56	20-Bit Bus-Interface D-Type Latch	✔	✔		SCES043A
SN74ALVCH16843	56	16-Bit Bus-Interface D-Type Latch	+	+		SCES044A
SN74ALVCH16863	48	18-Bit Bus Transceiver	✔	✔		SCES060
SN74ALVCH16901	64	18-Bit Universal Bus Transceiver With Clock Enable, Parity Generator		✔		SCES010B
SN74ALVCH16952	56	16-Bit Registered Bus Transceiver	✔	✔		SCES011
SN74ALVCH162240	48	16-Bit Buffer/Driver With Series Resistors	+	+		Call
SN74ALVCH162244	48	16-Bit Buffer/Driver With Series Resistors	✔	✔		SCES065A
SN74ALVCH162245	48	16-Bit Bus Transceiver With Series Resistors	+	+		Call
SN74ALVCH162260	56	12-to-24 Multiplexed D-Type Latch With Series Resistors	✔	✔		SCAS570A
SN74ALVCH162268	56	12-to-24 SDRAM Interleave Multiplexer With Series-Damping Resistors	✔	✔		SCES018A
SN74ALVCH162280	80	16-to-32 Registered Bus Exchanger			+	Call
SN74ALVCH162344	56	1-to-4 Address Driver With Series Resistors	✔	✔		SCES085A
SN74ALVCH162373	48	16-Bit D-Type Transparent Latch With Series-Damping Resistors	+	+		Call
SN74ALVCH162374	48	16-Bit D-Type Flip-Flop With Series-Damping Resistors	+	+		Call
SN74ALVCH162525	56	18-Bit Registered Bus Transceiver With Series-Damping Resistors	✔	✔		SCES058A
SN74ALVCH162540	48	16-Bit Buffer/Driver With Series Resistors	+	+		Call
SN74ALVCH162601	56	18-Bit Universal Bus Transceiver With Series Resistors	✔	✔		SCES026A
SN74ALVCH162721	56	20-Bit Bus-Interface Flip-Flop	✔	✔		SCES055A
SN74ALVCH162820	56	10-Bit Bus-Interface Flip-Flop With Dual Outputs	✔	✔		SCES012A
SN74ALVCH162821	56	20-Bit Bus-Interface Flip-Flop With Series-Damping Resistor	+	+		Call
SN74ALVCH162827	56	20-Bit Buffer/Driver With Series-Damping Resistors	✔	✔	+	SCES013B
SN74ALVCH162830	80	1-to-2 Address Driver			✔	SCES082
SN74ALVCH162831	80	1-to-4 Address Driver			+	SCES084

commercial package description and availability

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PLCC (plastic leaded chip carrier)
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QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
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PCA, PZ = 100 pins
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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule

✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

ALVC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			SSOP	TSSOP	TVSOP	
SN74ALVCHR162245	48	16-Bit Bus Transceiver With Series Resistors	✔	✔		SCES064
SN74ALVCHR162269	56	12-to-24 Registered Bus Exchanger	✔	✔		SCES050A
SN74ALVCHR162282	80	18-to-36 Registered Bus Exchanger			+	SCES087
SN74ALVCHR162409	56	9-Bit, 4-Port Universal Bus Exchanger With Series Resistors	✔	✔		SCES056A

commercial package description and availability

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DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

AS
Advanced Schottky Logic

The AS family of high-performance bipolar logic includes over 90 functions that offer high drive capabilities.

This family, combined with the ALS family, can be used to optimize system speed and power through performance budgeting. By using AS in speed-critical paths and ALS where speed is less critical, designers can optimize speed and power performance.

The AS family includes gates, flip-flops, counters, drivers, transceivers, registered transceivers, readback latches, clock drivers, register files, and multiplexers.

For AS data sheets, see the 1995 *ALS/AS Logic Data Book*, literature number SDAD001C.

DEVICE SELECTION GUIDE

AS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	PDIP	SOIC	
SN74AS00	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	SDAS187A
SN74AS02	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔	SDAS111B
SN74AS04	14	Hex Inverter	✔	✔	✔	SDAS063B
SN74AS08	14	Quad 2-Input Positive-AND Gate	✔	✔	✔	SDAS191A
SN74AS10	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔	SDAS002B
SN74AS11	16	Triple 3-Input Positive-AND Gate	✔	✔	✔	SDAS009C
SN74AS20	14	Dual 4-Input Positive-NAND Gate	✔	✔	✔	SDAS192B
SN74AS21	14	Dual 4-Input Positive-AND Gate		✔	✔	SDAS085B
SN74AS27	14	Triple 3-Input Positive-NOR Gate	✔	✔	✔	SDAS112B
SN74AS30	14	8-Input Positive-NAND Gate	✔	✔	✔	SDAS010B
SN74AS32	14	Quad 2-Input Positive-OR Gate	✔	✔	✔	SDAS113B
SN74AS74A	14	Dual D-Type Flip-Flop	✔	✔	✔	SDAS143C
SN74AS109A	16	Dual J-$\overline{K}$ Edge-Triggered Flip-Flop	✔	✔	✔	SDAS198B
SN74AS137	16	3-to-8 Decoder/Demultiplexer		✔	✔	SDAS203C
SN74AS138	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔	SDAS055E
SN74AS151	16	8-to-1 Data Selector/Multiplexer		✔	✔	SDAS205A
SN74AS153	16	Dual 4-to-1 Data Selector/Multiplexer		✔	✔	SDAS206A
SN74AS157	16	Quad 2-to-1 Data Selector/Multiplexer		✔	✔	SDAS081C
SN74AS158	16	Quad 2-to-1 Data Selector/Multiplexer		✔	✔	SDAS081C
SN74AS161	16	4-Bit Synchronous Binary Counter	✔	✔	✔	SDAS024A
SN74AS163	16	4-Bit Synchronous Binary Counter	✔	✔	✔	SDAS024A
SN74AS169A	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔	SDAS125B
SN74AS174	16	Hex D-Type Flip-Flop With Clear	✔	✔	✔	SDAS207D
SN74AS175B	16	Quad D-Type Flip-Flop With Clear	✔	✔	✔	SDAS207D
SN74AS181A	24	4-Bit Arithmetic Logic Unit	✔	✔	✔	SDAS093A
SN74AS194	16	4-Bit Bidirectional Universal Shift Register	✔	✔	✔	SDAS212A
SN74AS230A	14	Octal Buffer/Driver		✔	✔	SDAS213B
SN74AS240A	20	Octal Buffer/Driver	✔	✔	✔	SDAS214C
SN74AS241A	20	Octal Buffer/Driver	✔	✔	✔	SDAS153E
SN74AS244A	20	Octal Buffer/Driver	✔	✔	✔	SDAS142C
SN74AS245	20	Octal Bus Transceiver	✔	✔	✔	SDAS272

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
✢ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY MIL	PDIP	SOIC	LITERATURE REFERENCE
SN74AS250A	20	16-to-1 Data Generator/Multiplexer	✔	✔	✔	SDAS137A
SN74AS253A	16	Dual 4-to-1 Data Selector/Multiplexer		✔	✔	SDAS216A
SN74AS257	16	Quad 2-to-1 Data Selector/Multiplexer		✔	✔	SDAS124C
SN74AS258	16	Quad 2-to-1 Data Selector/Multiplexer		✔	✔	SDAS124C
SN74AS280	14	9-Bit Parity Generator/Checker		✔	✔	SDAS038C
SN74AS286	14	9-Bit Parity Generator/Checker	✔	✔	✔	SDAS050B
SN74AS298A	16	Quad 2-to-1 Multiplexer		✔	✔	SDAS219B
SN74AS353B	16	Dual 4-to-1 Data Selector/Multiplexer		✔	✔	SDAS222A
SN74AS373	20	Octal D-Type Transparent Latch	✔	✔	✔	SDAS083B
SN74AS374	20	Octal D-Type Flip-Flop	✔	✔	✔	SDAS167B
SN74AS533A	20	Octal D-Type Transparent Latch		✔	✔	SDAS254A
SN74AS573A	20	Octal D-Type Transparent Latch	✔	✔	✔	SDAS048D
SN74AS574	20	Octal D-Type Flip-Flop	✔	✔	✔	SDAS165B
SN74AS575	24	Octal D-Type Flip-Flop	✔	✔	✔	SDAS165B
SN74AS576	20	Octal D-Type Flip-Flop	✔	✔	✔	SDAS065B
SN74AS639	20	Octal Bus Transceiver		✔	✔	SDAS123A
SN74AS640	20	Octal Bus Transceiver	✔	✔	✔	SDAS122A
SN74AS641	20	Octal Bus Transceiver		✔	✔	SDAS300
SN74AS645	20	Octal Bus Transceiver	✔	✔	✔	SDAS278
SN74AS646	24	Octal Registered Bus Transceiver	✔	✔	✔	SDAS039F
SN74AS648	24	Octal Registered Bus Transceiver		✔	✔	SDAS039F
SN74AS651	24	Octal Registered Bus Transceiver	✔	✔	✔	SDAS066F
SN74AS652	24	Octal Registered Bus Transceiver	✔	✔	✔	SDAS066F
SN74AS756	20	Octal Buffer/Driver	✔	✔	✔	SDAS040B
SN74AS757	20	Octal Buffer/Driver		✔	✔	SDAS040B
SN74AS760	20	Octal Buffer/Driver	✔	✔	✔	SDAS141A
SN74AS804B	20	Hex 2-Input NAND Gate	✔	✔	✔	SDAS022C
SN74AS805B	20	Hex 2-Input NOR Gate	✔	✔	✔	SDAS023C
SN74AS808B	20	Hex 2-Input Positive-AND Gate	✔	✔	✔	SDAS018C
SN74AS821A	24	10-Bit Bus-Interface Flip-Flop	✔	✔	✔	SDAS230A
SN74AS823A	24	9-Bit Bus-Interface Flip-Flop	✔	✔	✔	SDAS231A

commercial package description and availability

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TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

AS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	PDIP	SOIC	
SN74AS825A	24	8-Bit Bus-Interface Flip-Flop	✔	✔	✔	SDAS020B
SN74AS832B	20	Hex 2-Input OR Gate	✔	✔	✔	SDAS017C
SN74AS867	24	8-Bit Synchronous Up/Down Binary Counter	✔	✔	✔	SDAS115C
SN74AS869	24	8-Bit Synchronous Up/Down Binary Counter	✔	✔	✔	SDAS115C
SN74AS873A	24	Dual 4-Bit D-Type Flip-Flop	✔	✔	✔	SDAS036D
SN74AS874	24	Dual 4-Bit D-Type Edge-Triggered Flip-Flop	✔	✔	✔	SDAS061C
SN74AS876	24	Dual 4-Bit D-Type Edge-Triggered Flip-Flop		✔	✔	SDAS061C
SN74AS885	24	8-Bit Magnitude Comparator	✔	✔	✔	SDAS236A
SN74AS1000A	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	SDAS056B
SN74AS1004A	14	Hex Inverting Buffer	✔	✔	✔	SDAS074B
SN74AS1008A	14	Quad 2-Input Positive-AND Gate		✔	✔	SDAS071B
SN74AS1032A	14	Quad 2-Input Positive-OR Gate	✔	✔	✔	SDAS072B
SN74AS1034A	14	Hex Noninverting Buffer	✔	✔	✔	SDAS053B
SN74AS1804	20	Hex 2-Input NAND Gate		✔		SDAS042C
SN74AS1805	20	Hex 2-Input NOR Gate		✔		SDAS043C
SN74AS1808	20	Hex 2-Input Positive-AND Gate		✔		SDAS044C
SN74AS1832	20	Hex 2-Input Positive-OR Gate		✔		SDAS045C
SN74AS4374B	20	8-Bit Dual-Rank Synchronizer		✔	✔	SDAS109D

commercial package description and availability

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SSOP (shrink small-outline package)
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TSSOP (thin shrink small-outline package)
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TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

BCT BiCMOS Bus-Interface Technology

BCT is a family of 8-, 9-, and 10-bit drivers, latches, transceivers, and registered transceivers. Designed specifically for bus-interface applications, BCT offers TTL I/O with high speeds, 64-mA output drive, and very low power in the disabled mode. Over 50 BCT functions are in production now.

A family of fast, high-drive bus-interface functions that provides the incident-wave switching required by large backplane applications has been incorporated into the BCT offering. Designed specifically to ensure incident-wave switching down to 25 Ω, the devices in the BiCMOS low-impedance driver family can maximize the speed and reliability of heavily loaded systems. Each device in this series delivers 188 mA of I_{OL} drive current.

Also included in our BCT family is a series of memory drivers. These devices incorporate a series-damping resistor to reduce overshoot and undershoot that can occur in memory-driving applications.

For BCT data sheets, see the 1994 *BCT BiCMOS Bus-Interface Logic Data Book*, literature number SCBD001B.

DEVICE SELECTION GUIDE

BCT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74BCT125A	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔		SCBS032E
SN74BCT126A	14	Quad Bus Buffer Gate (OE)	✔	✔	✔		SCBS252A
SN74BCT240	20	Octal Buffer/Driver	✔	✔	✔	✔	SCBS004E
SN74BCT241	20	Octal Buffer/Driver	✔	✔	✔	✔	SCBS005D
SN74BCT244	20	Octal Buffer/Driver	✔	✔	✔	✔	SCBS006E
SN74BCT245	20	Octal Bus Transceiver	✔	✔	✔	✔	SCBS013F
SN74BCT373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	SCBS016C
SN74BCT374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	SCBS019B
SN74BCT540A	20	Octal Buffer/Driver	✔	✔	✔		SCBS012D
SN74BCT541A	20	Octal Buffer/Driver	✔	✔	✔		SCBS011D
SN74BCT543	24	Octal Registered Bus Transceiver	✔	✔	✔		SCBS026C
SN74BCT574	20	Octal D-Type Flip-Flop				✔	SCBS074B
SN74BCT623	20	Octal Bus Transceiver	✔	✔	✔		SCBS020A
SN74BCT640	20	Octal Bus Transceiver	✔	✔	✔		SCBS025C
SN74BCT646	24	Octal Registered Bus Transceiver	✔	✔	✔		SCBS037C
SN74BCT652	24	Octal Registered Bus Transceiver	✔	✔	✔		SCBS038A
SN74BCT756	20	Octal Buffer/Driver		✔	✔		SCBS056A
SN74BCT760	20	Octal Buffer/Driver	✔	✔	✔		SCBS034B
SN74BCT2240	20	Octal Buffer/Driver With Series Resistors	✔	✔	✔	✔	SCBS030D
SN74BCT2244	20	Octal Buffer/Driver With Series Resistors	✔	✔	✔		SCBS017C
SN74BCT2245	20	Octal Bus Transceiver With Series Resistors		✔	✔	✔	SCBS102B
SN74BCT2827C	24	10-Bit Buffer/Driver With Series Resistors	✔	✔	✔		SCBS007E
SN74BCT2828B	24	10-Bit Buffer/Driver With Series Resistors	✔	✔	✔		SCBS058A
SN74BCT2953	24	Octal Bus Registered Transceiver		✔	✔		SCBS105B
SN74BCT25245	24	25-Ω Octal Bus Transceiver		✔	✔		SCBS053B
SN74BCT29821	24	10-Bit Bus-Interface Flip-Flop		✔	✔		SCBS021D
SN74BCT29823	24	9-Bit Bus-Interface Flip-Flop		✔	✔		SCBS018D
SN74BCT29827B	24	10-Bit Buffer/Driver		✔	✔		SCBS008C
SN74BCT29834	24	8-to-9-Bit Parity Bus Transceiver		✔	✔		SCBS256
SN74BCT29841	24	10-Bit Bus-Interface D-Type Latch		✔	✔		SCBS024C
SN74BCT29843	24	9-Bit Bus-Interface D-Type Latch		✔	✔		SCBS022C

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74BCT29854	24	8-to-9-Bit Parity Bus Transceiver		✔	✔		SCBS257
SN74BCT29863B	24	9-Bit Bus Transceiver		✔	✔		SCBS015D

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

64BCT
64-Series BiCMOS Technology

The 64BCT family offers all the features found in TI's standard BCT family. In addition, the family is specified from –40°C to 85°C and incorporates circuitry to protect the device in live-insertion applications.

For 64BCT data sheets, see the 1994 *BCT BiCMOS Bus-Interface Logic Data Book*, literature number SCBD001B.

DEVICE SELECTION GUIDE

64BCT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY PDIP	AVAILABILITY SOIC	LITERATURE REFERENCE
SN64BCT125A	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	SCBS052B
SN64BCT126A	14	Quad Bus Buffer Gate (OE)	✔	✔	SCBS051B
SN64BCT240	20	Octal Buffer/Driver	✔	✔	SCBS049A
SN64BCT241	20	Octal Buffer/Driver	✔	✔	SCBS046B
SN64BCT244	20	Octal Buffer/Driver	✔	✔	SCBS027A
SN64BCT245	20	Octal Bus Transceiver	✔	✔	SCBS040A
SN64BCT306	8	2-Bit Buffer/Driver	✔	✔	SCBS048B
SN64BCT541A	20	Octal Buffer/Line Driver	✔	✔	SCBS031B
SN64BCT757	20	Octal Buffer/Driver	✔	✔	SCBS479
SN64BCT25244	24	25-Ω Octal Buffer/Driver		✔	SCBS477
SN64BCT25245	24	25-Ω Octal Bus Transceiver	✔	✔	SCBS060A
SN64BCT29828B	24	10-Bit Buffer/Driver	✔	✔	SCBS478

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

BTA
Bus-Termination Arrays

The BTA family from TI offers a space-saving, efficient, and effective solution to bus-termination requirements. In high-speed digital systems with long transmission lines, reflecting waves on the line can cause voltage undershoots and overshoots that lead to malfunctions at the driven input. A BTA is a series of diodes that clamps a signal on a bus or any other signal trace using high-frequency logic to eliminate overshoot and undershoot problems.

For BTA data sheets, see the 1994 *F Logic Data Book*, literature number SDFD001B, or contact the Product Information Center at (972) 644-5580.

BTA

DEVICE	NO. PINS	FUNCTION	AVAILABILITY PDIP	AVAILABILITY SOIC	LITERATURE REFERENCE
SN74ACT1071	16	10-Bit Bus-Termination Array		✔	SCAS192
SN74ACT1073	20	16-Bit Bus-Termination Array		✔	SCAS193
SN74F1016	20	16-Bit Schottky Barrier Diode R-C Bus-Termination Array		✔	SDFS093G
SN74F1018	24	18-Bit Schottky Barrier Diode R-C Bus-Termination Array		✔	SDFS094
SN74F1056	16	8-Bit Schottky Barrier Diode Bus-Termination Array		✔	SDFS085
SN74S1050	16	12-Bit Schottky Barrier Diode Bus-Termination Array	✔	✔	SDLS015A
SN74S1051	16	12-Bit Schottky Barrier Diode Bus-Termination Array	✔	✔	Call
SN74S1052	20	16-Bit Schottky Barrier Diode Bus-Termination Array	✔	✔	SDLS016A
SN74S1053	20	16-Bit Schottky Barrier Diode Bus-Termination Array	✔	✔	SDLS017
SN74S1056	16	8-Bit Schottky Barrier Diode Bus-Termination Array		✔	SDLS019A

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

BTL/FB+
Backplane Transceiver Logic

The FB series devices are used for high-speed bus applications and are fully compatible with the IEEE 1194.1-1991 (BTL) and IEEE 896-1991 (Futurebus+) standards. These transceivers are available in 7-, 8-, 9-, and 18-bit versions with TTL and BTL translation in lower than 5-ns performance. Other features include drive up to 100 mA and bias pins for live-insertion applications.

For BTL/FB+ data sheets, see the 1997 *GTL, BTL, and ETL Logic Data Book*, literature number SCED004.

DEVICE SELECTION GUIDE

BTL/FB+

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	QFP	TQFP	
SN74FB1650	100	18-Bit TTL/BTL Universal Storage Transceiver			✔	SCBS178H
SN74FB1651	100	17-Bit TTL/BTL Universal Storage Transceiver With Buffered Clock Lines			✔	SCBS177H
SN74FB2031	52	9-Bit TTL/BTL Address/Data Transceiver	✔	✔		SCBS176G
SN74FB2032	52	9-Bit TTL/BTL Competition Transceiver	✔	✔		SCBS175E
SN74FB2033A	52	8-Bit TTL/BTL Registered Transceiver	✔	✔		SCBS174G
SN74FB2040	52	8-Bit TTL/BTL Transceiver	✔	✔		SCBS173F
SN74FB2041A	52	7-Bit TTL/BTL Transceiver		✔		SCBS172E

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule

✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

CBT
Crossbar Technology

In today's computing market, power and speed are two of the main concerns. CBT can address both of these issues in bus-interface applications. CBT enables a bus-interface device to function as a very fast bus switch, effectively isolating buses when the switch is closed and offering very little propagation delay when the switch is open. These devices can function as high-speed bus interfaces between computer-system components such as the central processing unit (CPU) and memory. CBT devices also can be used as 5-V to 3.3-V translators, allowing designers to mix 5-V or 3.3-V components in the same system.

The CBT devices are available in advanced packaging such as shrink small-outline packages (SSOP) and thin shrink small-outline packages (TSSOP) for reduced board area.

For CBT data sheets, see the 1996 *CBT Bus Switches Crossbar Technology Data Book*, literature number SCDD001A.

DEVICE SELECTION GUIDE

CBT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	SOIC	SSOP	TSSOP	TVSOP	
SN74CBT3125	14	Quad Bus Switch		✔	✔	✔		SCDS021B
SN74CBT3126	14	Quad Bus Switch		+	+	+		SCDS020B
SN74CBT3244	20	Dual 4-Bit Bus Switch With '244 Pinout		✔	✔	✔		SCDS001E
SN74CBT3245A	20	8-Bit Bus Switch With '245 Pinout		✔	✔	✔	+	SCDS002G
SN74CBT3251	16	8-to-1 Multiplexer/Data Selector		+	+	+		SCDS019C
SN74CBT3253	16	Dual 4-Bit to 1-Bit FET Multiplexer/Demultiplexer		✔	✔	✔	+	SCDS018E
SN74CBT3257	16	Quad 2-to-1 Bit FET Multiplexer/Demultiplexer		✔	✔	✔		SCDS017D
SN74CBT3306	8	Dual Bus Switch		✔		✔		SCDS016C
SN74CBTD3306	8	Dual Bus Switch With Level Shifting		✔		✔		SCDS030D
SN74CBTS3306	8	Dual Bus Switch With Clamping Diodes		✔		✔		SCDS029B
SN74CBT3345	20	8-Bit Bus Switch		✔	✔	✔		SCDS027B
SN74CBT3383	24	10-Bit Bus-Exchange Switch	✔	✔	✔	✔		SCDS003F
SN74CBTH3383	24	10-Bit Bus-Exchange Switch With Bus Hold		+	+	+		SCDS023E
SN74CBT3384A	24	10-Bit Bus Switch		✔	✔	✔	+	SCDS004F
SN74CBTD3384	24	10-Bit Bus Switch With Level Shifting	+	✔	✔	✔	+	SCDS025F
SN74CBTS3384	24	10-Bit Bus Switch With Clamping Diodes		✔	✔	✔		SCDS024D
SN74CBT3386	24	10-Bit Bus-Exchange Switch With Extended Voltage Range		+	+	+		SCDS022D
SN74CBT6800	24	10-Bit Bus Switch With Precharged Outputs for Live Insertion		✔	✔	✔		SCDS005G
SN74CBT16209	48	18-Bit Bus-Exchange Switch	✔		✔	✔	+	SCDS006G
SN74CBT16211	56	24-Bit Bus-Exchange Switch			✔	✔	+	SCDS028D
SN74CBT16212	56	24-Bit Bus-Exchange Switch			✔	✔	+	SCDS007H
SN74CBT16213	56	24-Bit Bus-Exchange Switch			✔	✔		SCDS026D
SN74CBT16214	56	12-Bit 3-to-1 Bus-Select Switch			✔	✔		SCDS008G
SN74CBT16232	56	16-Bit to 32-Bit Synchronous FET Multiplexer			✔	✔		SCDS009F
SN74CBT16233	56	16-Bit to 32-Bit FET Multiplexer/Demultiplexer			✔	✔		SCDS010D
SN74CBT16244	48	16-Bit Bus Switch			+	+	+	SCDS031C

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

74F
Fast Logic

74F logic is a general-purpose family of high-speed advanced bipolar logic. TI provides over 60 functions, including gates, buffer/drivers, bus transceivers, flip-flops, latches, counters, multiplexers, and demultiplexers in the 74F logic family.

For 74F data sheets, see the 1994 *F Logic Data Book*, literature number SDFD001B.

DEVICE SELECTION GUIDE

74F

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74F00	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SDFS035A
SN74F02	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔		SDFS036A
SN74F04	14	Hex Inverter	✔	✔	✔		SDFS037A
SN74F08	14	Quad 2-Input Positive-AND Gate		✔	✔		SDFS038A
SN74F10	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔		SDFS039A
SN74F11	14	Triple 3-Input Positive-AND Gate	✔	✔	✔		SDFS040A
SN74F20	14	Dual 4-Input Positive-NAND Gate	✔	✔	✔		SDFS041A
SN74F21	14	Dual 4-Input Positive-AND Gate	✔	✔	✔		SDFS006A
SN74F27	14	Triple 3-Input Positive-NOR Gate	✔	✔	✔		SDFS042A
SN74F30	14	8-Input Positive-NAND Gate	✔	✔	✔		SDFS043A
SN74F32	14	Quad 2-Input Positive-OR Gate	✔	✔	✔		SDFS044A
SN74F38	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SDFS013A
SN74F74	14	Dual D-Type Flip-Flop	✔	✔	✔		SDFS046A
SN74F86	14	Quad 2-Input Exclusive-OR Gate		✔	✔		SDFS019A
SN74F109	16	Dual J-$\overline{K}$ Positive-Edge-Triggered Flip-Flop With Clear and Preset	✔	✔	✔		SDFS047A
SN74F112	14	Dual J-K Negative-Edge-Triggered Flip-Flop With Clear and Preset		✔	✔		SDFS048A
SN74F125	14	Quad Bus Buffer Gate ($\overline{OE}$)		✔	✔		SDFS016A
SN74F126	14	Quad Bus Buffer Gate (OE)		✔	✔		SDFS017A
SN74F138	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔		SDFS051B
SN74F151B	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS023A
SN74F153	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS052A
SN74F157A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS053A
SN74F158A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS054A
SN74F161A	16	4-Bit Synchronous Binary Counter		✔	✔		SDFS056A
SN74F163A	16	4-Bit Synchronous Binary Counter		✔	✔		SDFS088
SN74F169	16	4-Bit Synchronous Up/Down Binary Counter		✔	✔		SDFS089
SN74F174A	16	Hex D-Type Flip-Flop With Clear		✔	✔		SDFS029B
SN74F175	16	Quad D-Type Flip-Flop With Clear	✔	✔	✔		SDFS058A
SN74F240	20	Octal Buffer/Driver	✔	✔	✔	✔	SDFS061A
SN74F241	20	Octal Buffer/Driver	✔	✔	✔		SDFS090
SN74F243	14	Quad Bus Transceiver		✔	✔		SDFS086

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74F244	20	Octal Buffer/Driver	✔	✔	✔	✔	SDFS063A
SN74F245	20	Octal Bus Transceiver	✔	✔	✔	✔	SDFS010A
SN74F251B	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS066A
SN74F253	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS064A
SN74F257	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS065A
SN74F258	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDFS067A
SN74F260	14	Dual 5-Input Positive-NOR Gate		✔	✔		SDFS012A
SN74F280B	14	9-Bit Parity Generator/Checker	✔	✔	✔		SDFS008A
SN74F283	16	4-Bit Binary Full Adder With Fast Carry	✔	✔	✔		SDFS069A
SN74F299	20	8-Bit Universal Shift/Storage Register	✔	✔	✔		SDFS071A
SN74F373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	SDFS076A
SN74F374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	SDFS077A
SN74F377A	20	Octal D-Type Flip-Flop With Clock Enable		✔	✔		SDFS018D
SN74F521	20	8-Bit Identity Comparator	✔	✔	✔		SDFS091
SN74F541	20	Octal Buffer/Driver	✔	✔	✔		SDFS021A
SN74F543	24	Octal Registered Bus Transceiver		✔	✔	✔	SDFS025B
SN74F573	20	Octal D-Type Transparent Latch	✔	✔	✔		SDFS011A
SN74F574	20	Octal D-Type Flip-Flop		✔	✔		SDFS005A
SN74F623	20	Octal Bus Transceiver	✔	✔	✔		SDFS087
SN74F2244	20	Octal Buffer/Driver With Series Resistors		✔	✔	✔	SDFS095B
SN74F2245	20	Octal Bus Transceiver With Series-Damping Resistors		✔	✔		SDFS099
SN74F2373	20	Octal D-Type Transparent Latch With Series Resistors		✔	✔		SDFS100

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

FIFO
First-In, First-Out Memories

TI has an extended product offering of Advanced CMOS (ACT) and Advanced BiCMOS (ABT) FIFOs. The FIFO product family includes clocked unidirectional and bidirectional FIFOs offered in 64K to 8K memory depths and 1-bit to 36-bit widths. Strobed unidirectional and bidirectional FIFOs are offered in 16K to 4K memory depths and 4-bit to 18-bit widths.

TI's application-specific FIFOs are specially designed for use in telecommunications, DSP, internetworking systems, and high-bandwidth computing. These devices include features such as parity generate and check, retransmit, bus matching, byte swapping, bypass mode, and microprocessor-like control interface.

Application-specific FIFOs, in addition to TI's Widebus™ FIFO products, offer space-saving surface-mount packaging and multiple-speed sorts for ease of design.

For FIFO data sheets, see the 1996 *High-Performance FIFO Memories Data Book*, literature number SCAD003C.

DEVICE SELECTION GUIDE

FIFO

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	PLCC	QFP	TQFP	
SN74ABT3611	132, 120	64 × 36 Clocked FIFO						✔	✔	SCBS127D
SN74ABT3612	132, 120	64 × 36 × 2 Clocked Bidirectional FIFO						✔	✔	SCBS129F
SN74ABT3613	132, 120	64 × 36 Clocked FIFO						✔	✔	SCBS128E
SN74ABT3614	132, 120	64 × 36 × 2 Clocked Bidirectional FIFO	✔					✔	✔	SCBS126F
SN74ABT7819	80, 80	512 × 18 × 2 Clocked Bidirectional FIFO						✔	✔	SCBS125D
SN74ACT3622	132, 120	256 × 36 × 2 Clocked Bidirectional FIFO						✔	✔	SCAS247C
SN74ACT3631	132, 120	512 × 36 Clocked FIFO						✔	✔	SCAS246F
SN74ACT3632	132, 120	512 × 36 × 2 Clocked Bidirectional FIFO	✔					✔	✔	SCAS224C
SN74ACT3638	132, 120	512 × 32 × 2 Clocked Bidirectional FIFO						✔	✔	SCAS228C
SN74ACT3641	132, 120	1K × 36 Clocked FIFO	✔					✔	✔	SCAS338B
SN74ACT7801	68	1K × 18 Clocked FIFO					✔			SCAS111
SN74ACT7803	56	512 × 18 Clocked FIFO				✔				SCAS191A
SN74ACT7805	56	256 × 18 Clocked FIFO				✔				SCAS201
SN74ACT7807	44, 64	2K × 9 Clocked FIFO					✔		✔	SCAS200B
SN74ACT7811	68, 80	1K × 18 Clocked FIFO					✔		✔	SCAS151C
SN74ACT7813	56	64 × 18 Clocked FIFO				✔				SCAS199
SN74ACT7881	68, 80	1K × 18 Clocked FIFO	✔				✔		✔	SCAS227C
SN74ACT7882	68, 80	2K × 18 Clocked FIFO					✔		✔	SCAS445A
SN74ALVC7803	56	3.3-V 512 × 18 Clocked FIFO				✔				SDAS274A
SN74ALVC7805	56	3.3-V 256 × 18 Clocked FIFO				✔				SCAS436B
SN74ALVC7813	56	3.3-V 64 × 18 Clocked FIFO				✔				SCAS436B
SN74ACT2226	24	64 × 1 Clocked FIFO			✔					SCAS219B
SN74ACT2227	28	64 × 1 Clocked FIFO			✔					SCAS220B
SN74ACT2228	24	256 × 1 Clocked FIFO			✔					SCAS219B
SN74ACT2229	28	256 × 1 Clocked FIFO			✔					SCAS220B
SN74ABT7820	80, 80	512 × 18 × 2 Strobed Bidirectional FIFO					✔		✔	SCAS445A
SN74ACT2235	44, 64	1K × 9 × 2 Strobed Bidirectional FIFO					✔		✔	SCAS148C
SN74ACT2236	44	1K × 9 × 2 Strobed FIFO					✔			SCAS149A
SN74ACT7802	68, 80	1K × 18 Strobed FIFO					✔		✔	SCAS187B
SN74ACT7804	56	512 × 18 Strobed FIFO				✔				SCAS204A
SN74ACT7806	56	256 × 18 Strobed FIFO				✔				SCAS438A
SN74ACT7808	44, 64	2K × 9 Strobed FIFO					✔		✔	SCAS205B
SN74ACT7814	56	64 × 18 Strobed FIFO				✔				SCAS209A

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

FIFO

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	PLCC	QFP	TQFP	
SN74ALVC7804	56	3.3-V 512 × 18 Strobed FIFO				✔				SCAS432
SN74ALVC7806	56	3.3-V 256 × 18 Strobed FIFO				✔				SCAS437C
SN74ALVC7814	56	3.3-V 64 × 18 Strobed FIFO				✔				SCAS462
SN74ALS2238	40, 44	32 × 9 × 2 Bidirectional Strobed FIFO, 40 MHz		✔			✔			SCAS250D
SN74LS224A	16	16 × 4 Synchronous Strobed FIFO, 10 MHz	✔	✔						SDLS023
SN74ACT72211L	32	512 × 9 Synchronous FIFO					✔			SCAS222
SN74ACT72221L	32	1K × 9 Synchronous FIFO					✔			SCAS222
SN74ACT72231L	32	2K × 9 Synchronous FIFO					✔			SCAS222
SN74ACT72241L	32	4K × 9 Synchronous FIFO					✔			SCAS222
SN74ACT7200L	28, 28, 32	256 × 9 Asynchronous FIFO		✔	✔		✔			SCAS221A
SN74ACT7201LA	28, 28, 32	512 × 9 Asynchronous FIFO		✔	✔		✔			SCAS221A
SN74ACT7202LA	28, 28, 32	1K × 9 Asynchronous FIFO		✔	✔		✔			SCAS221A
SN74ACT7203L	28, 32	2K × 9 Asynchronous FIFO		✔			✔			SCAS226A
SN74ACT7204L	28, 32	4K × 9 Asynchronous FIFO		✔			✔			SCAS226A
SN74ACT7205L	28, 32	8K × 9 Asynchronous FIFO		✔			✔			SCAS221A
SN74ACT7206L	28, 32	16K × 9 Asynchronous FIFO		✔			✔			SCAS226A
SN74ALS232B	16, 16, 20	16 × 4 Asynchronous FIFO, 40 MHz		✔	✔		✔			SCAS251
SN74ALS233B	16, 16, 20	16 × 5 Asynchronous FIFO, 40 MHz		✔	✔		✔			SCAS253
SN74ALS236	16	64 × 4 Asynchronous FIFO, 30 MHz		✔	✔		✔			SDAS107A
SN74ALS2232A	24, 28	64 × 8 Asynchronous FIFO, 40 MHz		✔			✔			SCAS248
SN74ALS2233A	28, 28	64 × 9 Asynchronous FIFO, 40 MHz		✔			✔			SCAS249
SN74S225	20	16 × 5 Asynchronous FIFO, 10 MHz		✔						SDLS207

commercial package description and availability

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DBV = 5 pins

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PM = 64 pins
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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

GTL
Gunning-Transceiver-Logic Technology

GTL technology is a new reduced-voltage switching standard that provides high-speed, point-to-point communications with low power dissipation. TI offers GTL/TTL translators to interface with the TTL-based subsystems. This enables designers to use the GTL-switching standards for speed-sensitive subsystems and to use the translators to interface with the rest of the system.

GTL devices have innovative circuitry, such as bus hold on the inputs to eliminate the need for external pullup resistors for floating inputs, which reduces power, cost, and board-layout time. Output edge-rate control (OEC™) is offered on the outputs to reduce electromagnetic interference (EMI) caused by the high frequencies of GTL.

Industry-leading packaging such as the shrink small-outline package (SSOP) and thin shrink small-outline package (TSSOP) is available for higher performance and reduced board space.

For GTL data sheets, see the 1997 *GTL, BTL, and ETL Logic Data Book*, literature number SCED004.

SSTL
Series-Stub Terminated Logic

DEVICE SELECTION GUIDE

GTL/SSTL

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	SSOP	TSSOP	
SN74GTL16612	56	18-Bit Universal Bus Transceiver With OEC™	+	✔	✔	SCBS480E
SN74GTL16616	56	17-Bit Universal Bus Transceiver With Buffered Clock Outputs and OEC™	+	✔	✔	SCBS481D
SN74GTL16622	64	18-Bit LVTTL-to-GTL/GTL+ Registered Transceiver With OEC™		+	+	SCES049C
SN74GTL16922	64	18-Bit LVTTL-to-GTL/GTL+ Registered Transceiver With 5-V Tolerance and OEC™		+	+	SCBS673A
SN74GTL16923	64	18-Bit LVTTL-to-GTL/GTL+ Registered Transceiver With 5-V Tolerance and OEC™		+	+	SCBS674A
SN74SSTL16837	64	20-Bit SSTL_3 Universal Bus Driver			+	SCBS675

commercial package description and availability

PDIP (plastic dual-in-line package)
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SOIC (small-outline integrated circuit)
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DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
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SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

HC/HCT
High-Speed CMOS Logic

For low-power logic requirements, TI offers a full family of HC/HCT logic. Over 100 device types are available, including gates, latches, flip-flops, buffer/drivers, counters, multiplexers, transceivers, and registered transceivers.

The HC family offers CMOS-compatible inputs and the HCT family offers TTL-compatible inputs.

For HC/HCT data sheets, see the 1996 *AHC/AHCT, HC/HCT, and LV CMOS Logic Data Book*, literature number SCLD004.

DEVICE SELECTION GUIDE

HC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
SN74HC00	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	✔	✔	SCLS181A
SN74HC02	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔	✔	✔	SCLS076A
SN74HC03	14	Quad 2-Input Positive-NAND Gate With Open-Drain Outputs	✔	✔	✔			SCLS077A
SN74HC04	14	Hex Inverter	✔	✔	✔	✔	✔	SCLS078A
SN74HCU04	14	Unbuffered Hex Inverter	✔	✔	✔			SCLS079A
SN74HC05	14	Hex Inverter With Open-Drain Outputs	✔	✔	✔	✔	✔	SCLS080A
SN74HC08	14	Quad 2-Input Positive-AND Gate	✔	✔	✔	✔	✔	SCLS081A
SN74HC10	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔			SCLS083A
SN74HC11	14	Triple 3-Input Positive-AND Gate	✔	✔	✔			SCLS084A
SN74HC14	14	Hex Inverter With Schmitt-Trigger	✔	✔	✔	✔	✔	SCLS085A
SN74HC20	14	Dual 4-Input Positive-NAND Gate	✔	✔	✔			SCLS086B
SN74HC21	14	Dual 4-Input Positive-AND Gate	✔	✔	✔			SCLS087A
SN74HC27	14	Triple 3-Input Positive-NOR Gate	✔	✔	✔			SCLS088A
SN74HC32A	14	Quad 2-Input Positive-OR Gate	✔	✔	✔	✔	✔	Call
SN74HC42	16	4-to-10 BCD to Decimal Decoder	✔	✔	✔			SCLS091A
SN74HC74	14	Dual D-Type Flip-Flop	✔	✔	✔	✔	✔	SCLS094A
SN74HC86	14	Quad 2-Input Exclusive-OR Gate	✔	✔	✔	✔		SCLS100A
SN74HC109	16	Dual J-$\overline{K}$ Positive-Edge-Triggered Flip-Flop	✔	✔	✔			SCLS098
SN74HC112	16	Dual J-K Negative-Edge-Triggered Flip-Flop	✔	✔	✔			SCLS099A
SN74HC125	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔	✔	✔	SCLS104A
SN74HC126	14	Quad Bus Buffer Gate (OE)	✔	✔	✔	✔	✔	SCLS103A
SN74HC132	14	Quad 2-Input Positive-NAND Gate With Schmitt-Trigger Inputs	✔	✔	✔	✔	✔	SCLS034B
SN74HC138	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔		✔	SCLS107B
SN74HC139	16	Dual 2–to-4 Line Decoder/Demultiplexer	✔	✔	✔	✔	✔	SCLS108A
SN74HC148	16	8-to-3 Line Priority Encoder	✔	✔	✔			SCLS109C
SN74HC151	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔	✔		SCLS110B
SN74HC153	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		✔	SCLS112A
SN74HC157	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔			SCLS113A
SN74HC161	16	4-Bit Synchronous Binary Counter	✔	✔	✔			SCLS297
SN74HC163	16	4-Bit Synchronous Binary Counter	✔	✔	✔			SCLS298
SN74HC164	14, 16	8-Bit Parallel-Out Serial Shift Register	✔	✔	✔			SCLS115A

commercial package description and availability

PDIP (plastic dual-in-line package)
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PLCC (plastic leaded chip carrier)
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QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
SN74HC165	16	8-Bit Parallel-Load Shift Register	✔	✔	✔		✔	SCLS116B
SN74HC165	16	8-Bit Parallel-Load Shift Register	✔	✔	✔		✔	SCLS116B
SN74HC166	16	8-Bit Parallel-Load Shift Register	✔	✔	✔			SCLS117A
SN74HC174	16	Hex D-Type Flip-Flop	✔	✔	✔			SCLS119A
SN74HC175	16	Quad D-Type Flip-Flop With Clear	✔	✔	✔		✔	SCLS299
SN74HC191	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔			SCLS121A
SN74HC193	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔			SCLS122A
SN74HC240	20	Octal Buffer/Driver	✔	✔	✔	✔		SCLS128A
SN74HC241	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCLS300
SN74HC244A	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	Call
SN74HC245	20	Octal Bus Transceiver	✔	✔	✔	✔	✔	SCLS131A
SN74HC251	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔			SCLS132A
SN74HC253	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔			SCLS133A
SN74HC257	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔	✔	✔	SCLS349
SN74HC259	16	8-Bit Addressable Latch	✔	✔	✔	✔	✔	SCLS134A
SN74HC266	14	Quad 2-Input Exclusive-NOR Gate With Open-Drain Outputs		✔	✔			SCLS135B
SN74HC273	20	Octal D-Type Flip-Flop With Clear	✔	✔	✔	✔	✔	SCLS136A
SN74HC365	16	Hex Buffer/Driver	✔	✔	✔			SCLS308A
SN74HC367	16	Hex Buffer/Driver	✔	✔	✔			SCLS309A
SN74HC368	16	Hex Buffer/Driver	✔	✔	✔			SCLS310
SN74HC373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔	SCLS140A
SN74HC374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔	✔	SCLS141A
SN74HC377	20	Octal D-Type Flip-Flop With Clock Enable	✔	✔	✔			SCLS307
SN74HC393	14	Dual 4-Bit Binary Counter	✔	✔	✔	✔		SCLS143A
SN74HC534	20	Octal D-Type Flip-Flop	✔	✔	✔			SCLS311
SN74HC540	20	Octal Buffer/Driver	✔	✔	✔			SCLS007A
SN74HC541	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCLS305
SN74HC563	20	Octal D-Type Transparent Latch	✔	✔	✔			SCLS145A
SN74HC573A	20	Octal D-Type Transparent Latch	✔	✔	✔	✔	✔	SCLS147A
SN74HC574	20	Octal D-Type Flip-Flop	✔	✔	✔			SCLS148A
SN74HC590A	16	8-Bit Binary Counter	✔	✔	✔			SCLS039B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE SELECTION GUIDE

HC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
SN74HC594	16	8-Bit Shift Register		✔	✔	✔		SCLS040A
SN74HC595	16	8-Bit Shift Register	✔	✔	✔	✔		SCLS041A
SN74HC623	20	Octal Bus Transceiver		✔	✔			SCLS149A
SN74HC640	20	Octal Bus Transceiver	✔	✔	✔			SCLS303
SN74HC645	20	Octal Bus Transceiver	✔	✔	✔			SCLS304
SN74HC646	24	Octal Registered Bus Transceiver		✔	✔			SCLS150A
SN74HC652	24	Octal Registered Bus Transceiver		✔	✔			SCLS151A
SN74HC682	20	8-Bit Magnitude Comparator		✔	✔			SCLS018B
SN74HC684	20	8-Bit Magnitude Comparator		✔	✔			SCLS340
SN74HC688	20	8-Bit Magnitude Comparator	✔	✔	✔	✔	✔	SCLS010A
SN74HC4020	16	14-Bit Asynchronous Binary Counter	✔	✔	✔			SCLS158A
SN74HC4040	16	12-Bit Asynchronous Binary Counter	✔	✔	✔	✔	✔	SCLS160A
SN74HC4060	16	14-Bit Asynchronous Binary Counter/Oscillator		✔	✔			SCLS161A
SN74HC4066	14	Quad Bilateral Analog Switch		✔	✔	✔	✔	SCLS325A
SN74HC7001	14	Quad 2-Input Positive-AND Gate		✔	✔			SCLS035A
SN74HC7002	14	Quad 2-Input Positive-NOR Gate		✔	✔			SCLS033B
SN74HC7032	14	Quad 2-Input Positive-OR Gate		✔	✔			SCLS036A

commercial package description and availability

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QFP (plastic quad flat package)
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PQ = 100/132 pins

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D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
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SOT (small-outline transistor)
DBV = 5 pins

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PAG = 64 pins
PM = 64 pins
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PCA, PZ = 100 pins
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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

HCT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	
SN74HCT00	14	Quad 2-Input Positive-NAND Gate		✔	✔	✔	✔	SCLS062A
SN74HCT02	14	Quad 2-Input Positive-NOR Gate		✔	✔	✔		SCLS065A
SN74HCT04	14	Hex Inverter	✔	✔	✔	✔	✔	SCLS042A
SN74HCT08	14	Quad 2-Input Positive-AND Gate		✔	✔	✔	✔	SCLS063A
SN74HCT14	14	Hex Inverter With Schmitt-Trigger	✔	✔	✔	✔	✔	SCLS225A
SN74HCT32	14	Quad 2-Input Positive-OR Gate		✔	✔	✔	✔	SCLS064A
SN74HCT74	14	Dual D-Type Flip-Flop		✔	✔	✔	✔	SCLS169A
SN74HCT125	14	Quad Bus Buffer Gate ($\overline{OE}$)		✔	✔			SCLS069B
SN74HCT138	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔	✔	✔	SCLS171B
SN74HCT139	16	Dual 2-to-4 Decoder/Demultiplexer		✔	✔	✔	✔	SCLS066A
SN74HCT157	16	Quad 2-to-1 Data Selector/Multiplexer		✔	✔			SCLS071A
SN74HCT240	20	Octal Buffer/Driver	✔	✔	✔			SCLS174A
SN74HCT244	20	Octal Buffer/Driver	✔	✔	✔	✔	✔	SCLS175A
SN74HCT245	20	Octal Bus Transceiver	✔	✔	✔	✔	✔	SCLS020B
SN74HCT257	16	Quad 2-to-1 Data Selector/Multiplexer		✔	✔			SCLS072A
SN74HCT273	20	Octal D-Type Flip-Flop With Clear		✔	✔	✔	✔	SCLS068B
SN74HCT373	20	Octal D-Type Transparent Latch	✔	✔	✔	✔		SCLS009A
SN74HCT374	20	Octal D-Type Flip-Flop	✔	✔	✔	✔		SCLS005A
SN74HCT377	20	Octal D-Type Flip-Flop With Clock Enable		✔	✔			SCLS067B
SN74HCT540	20	Octal Buffer/Driver	✔	✔	✔			SCLS008A
SN74HCT541	20	Octal Buffer/Driver	✔	✔	✔	✔		SCLS306
SN74HCT573	20	Octal D-Type Transparent Latch		✔	✔	✔	✔	SCLS176A
SN74HCT574	20	Octal D-Type Flip-Flop		✔	✔		✔	SCLS177B
SN74HCT623	20	Octal Bus Transceiver		✔	✔			SCLS016A
SN74HCT645	20	Octal Bus Transceiver		✔	✔			SCLS019A
SN74HCT646	24	Octal Registered Bus Transceiver		✔	✔			SCLS178A
SN74HCT652	24	Octal Registered Bus Transceiver		✔	✔			SCLS179A

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

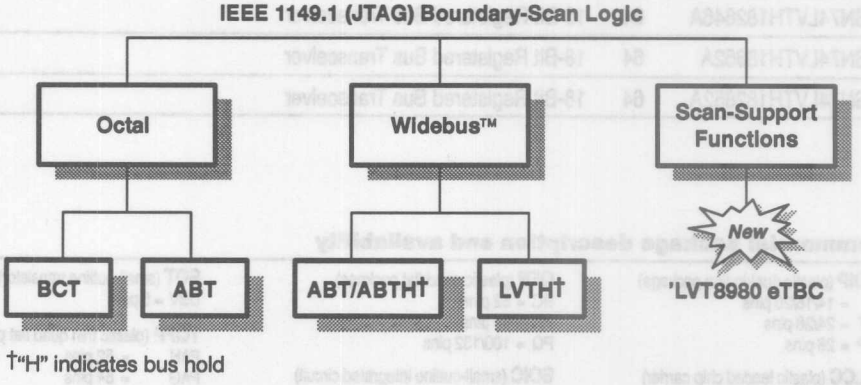
IEEE 1149.1 (JTAG) Boundary-Scan Logic Devices

The IEEE 1149.1 (JTAG) boundary-scan logic family of octal, Widebus™, and scan-support functions incorporates circuitry that allows these devices and the electronic systems in which they are used to be tested without reliance on traditional probing techniques.

Bus-interface logic devices are available in BCT, ABT, and LVT technologies, in 8-, 18-, and 20-bit options of the standard buffers, latches, and transceivers. Package options for these devices include plastic dual in-line (PDIP), small-outline integrated circuit (SOIC), shrink small-outline package (SSOP), thin shrink small-outline package (TSSOP), and thin quad flatpack (TQFP). The scan-support functions include devices for controlling the test bus, performing at-speed functional testing, and partitioning the scan path into smaller, more manageable segments.

Over 30 devices, composed of a wide selection of BCT and ABT octals, ABT and LVT Widebus™, and each of the scan-support functions, are available. Bus-hold and series-damping resistor features also are available.

For JTAG data sheets, see the 1997 *Boundary-Scan Logic IEEE Std 1149.1 (JTAG)*, literature number SCTD002A.



IEEE 1149.1 (JTAG)

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	PLCC	TQFP	
Widebus™ Devices										
SN74ABT18245A	56	18-Bit Bus Transceiver	✔			✔	✔			SCBS110F
SN74ABT18640	56	18-Bit Inverting Bus Transceiver				✔	✔			SCBS267C
SN74ABTH18502A	64	18-Bit Universal Bus Transceiver	✔						✔	SCBS164D
SN74ABTH18504A	64	20-Bit Universal Bus Transceiver							✔	SCBS165C
SN74ABTH18646A	64	18-Bit Registered Bus Transceiver	✔						✔	SCBS166D
SN74ABTH18652A	64	18-Bit Registered Bus Transceiver							✔	SCBS167D
SN74ABTH182502A	64	18-Bit Universal Bus Transceiver							✔	SCBS164D
SN74ABTH182504A	64	20-Bit Universal Bus Transceiver							✔	SCBS165C
SN74ABTH182646A	64	18-Bit Registered Bus Transceiver							✔	SCBS166D
SN74ABTH182652A	64	18-Bit Registered Bus Transceiver							✔	SCBS167D
SN74LVTH18245	56	18-Bit Bus Transceiver				+	+			SCBS161C
SN74LVTH182245	56	18-Bit Bus Transceiver				+	+			SCBS161C
SN74LVTH18502A	64	18-Bit Universal Bus Transceiver	+						✔	SCBS668
SN74LVTH182502A	64	18-Bit Universal Bus Transceiver							✔	SCBS668
SN74LVTH18504A	64	20-Bit Universal Bus Transceiver							✔	SCBS667
SN74LVTH182504A	64	20-Bit Universal Bus Transceiver							✔	SCBS667
SN74LVTH18512	64	18-Bit Universal Bus Transceiver					+			SCBS671
SN74LVTH182512	64	18-Bit Universal Bus Transceiver					+			SCBS671
SN74LVTH18514	64	20-Bit Universal Bus Transceiver					+			SCBS670
SN74LVTH182514	64	20-Bit Universal Bus Transceiver					+			SCBS670
SN74LVTH18516	64	18-Bit Universal Bus Transceiver					+			SCBS672
SN74LVTH182516	64	18-Bit Universal Bus Transceiver					+			SCBS672
SN74LVTH18640	56	18-Bit Inverting Bus Transceiver				+	+			SCBS310B
SN74LVTH182640	56	18-Bit Inverting Bus Transceiver				+	+			SCBS310B
SN74LVTH18646A	64	18-Bit Registered Bus Transceiver							+	SCBS311B
SN74LVTH182646A	64	18-Bit Registered Bus Transceiver							+	SCBS311B
SN74LVTH18652A	64	18-Bit Registered Bus Transceiver							+	SCBS312B
SN74LVTH182652A	64	18-Bit Registered Bus Transceiver							+	SCBS312B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

IEEE 1149.1 (JTAG)

DEVICE	NO. PINS	FUNCTION	AVAILABILITY							LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	TSSOP	PLCC	TQFP	
Octal Bus-Interface Devices										
SN74BCT8240A	24	Octal Buffer/Driver	✔	✔	✔					SCBS067D
SN74BCT8244A	24	Octal Buffer/Driver	✔	✔	✔					SCBS042E
SN74BCT8245A	24	Octal Bus Transceiver	✔	✔	✔					SCBS043E
SN74BCT8373A	24	Octal D-Type Latch	✔	✔	✔					SCBS044F
SN74BCT8374A	24	Octal D-Type Flip-Flop	✔	✔	✔					SCBS045E
SN74ABT8245	24	Octal Bus Transceiver	✔		✔					SCBS124C
SN74ABT8543	28	Octal Registered Bus Transceiver	✔		✔	✔				SCBS120E
SN74ABT8646	28	Octal Registered Bus Transceiver	✔		✔	✔				SCBS123E
SN74ABT8652	28	Octal Registered Bus Transceiver	✔		✔	✔				SCBS122E
SN74ABT8952	28	Octal Registered Bus Transceiver			✔	✔				SCBS121D
Scan-Support Devices										
SN74LVT8980	24	JTAG Embedded Test Bus Controller	✔		✔					SCBS676
SN74ACT8990	44	JTAG Test Bus Controller	✔					✔		SCAS190C
SN74ACT8994	28	Digital Bus Monitor						✔		SCAS196D
SN74ABT8996	24	Addressable Scan Port	✔		✔		✔			SCBS489A
SN74ACT8997	28	Scan-Path Linker	✔	✔	✔					SCAS157C
SN74ACT8999	28	Scan-Path Selector With 8-Bit Bidirectional Data Buses	✔	✔	✔					SCAS158C

commercial package description and availability

PDIP (plastic dual-in-line package)
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SOIC (small-outline integrated circuit)
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SSOP (shrink small-outline package)
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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
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schedule
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MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

LS
Low-Power Schottky Logic

While the overall demand for LS products is declining, there remains significant interest in the marketplace for many of the LS functions. TI will continue to supply LS products as long as there is an appropriate level of market demand for them.

The LS family is not recommended for new designs.

For LS data sheets, contact the Product Information Center at (972) 644-5580.

DEVICE SELECTION GUIDE

LS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74LS00	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	✔	SDLS025
SN74LS01	14	Quad 2-Input Positive-NAND Gate With Open-Collector Outputs	✔	✔	✔		SDLS026
SN74LS02	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔		SDLS027
SN74LS03	14	Quad 2-Input Positive-NAND Gate With Open-Collector Outputs	✔	✔	✔		SDLS028
SN74LS04	14	Hex Inverter	✔	✔	✔		SDLS029
SN74LS05	14	Hex Inverter With Open-Collector Outputs	✔	✔	✔		SDLS030
SN74LS06	14	Hex Inverter With Open-Collector Outputs	✔	✔	✔	✔	SDLS020A
SN74LS07	14	Hex Buffer With Open-Collector Outputs	✔	✔	✔	✔	SDLS021A
SN74LS08	14	Quad 2-Input Positive-AND Gate	✔	✔	✔		SDLS033
SN74LS09	14	Quad 2-Input Positive-AND Gate With Open-Collector Outputs	✔	✔	✔		SDLS034
SN74LS10	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔		SDLS035
SN74LS11	14	Triple 3-Input Positive-AND Gate	✔	✔	✔		SDLS131
SN74LS14	14	Hex Inverter With Schmitt Trigger	✔	✔	✔	✔	SDLS049
SN74LS19A	14	Hex Inverter With Schmitt Trigger		✔	✔		SDLS138
SN74LS20	14	Dual 4-Input Positive-NAND Gate	✔	✔	✔		SDLS079
SN74LS21	14	Dual 4-Input Positive-AND Gate	✔	✔	✔		SDLS022
SN74LS26	14	Quad 2-Input NAND Gate	✔	✔	✔		SDLS087
SN74LS27	14	Triple 3-Input Positive-NOR Gate	✔	✔	✔		SDLS089
SN74LS30	14	8-Input Positive-NAND Gate	✔	✔	✔		SDLS099
SN74LS31	14	Delay Element		✔	✔		SDLS157
SN74LS32	14	Quad 2-Input Positive-OR Gate	✔	✔	✔		SDLS100
SN74LS33	14	Quad 2-Input NOR Gate With Open-Collector Outputs	✔	✔	✔		SDLS101
SN74LS37	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SDLS103
SN74LS38	14	Quad 2-Input Positive-NAND Gate With Open-Collector Outputs	✔	✔	✔		SDLS105
SN74LS42	16	4-to-10 BCD-to-Decimal Decoder	✔	✔	✔		SDLS109
SN74LS47	16	BCD 7-Segment Decoder/Driver	✔	✔	✔		SDLS111
SN74LS51	14	Dual 2-Input and Dual 3-Input AND/OR Gate	✔	✔	✔		SDLS113
SN74LS73A	14	Dual J-K Flip-Flop	✔	✔	✔		SDLS118
SN74LS74A	14	Dual D-Type Flip-Flop	✔	✔	✔		SDLS119
SN74LS75	16	4-Bit D-Type Latch	✔	✔	✔		SDLS120
SN74LS85	16	4-Bit Magnitude Comparator	✔	✔	✔		SDLS123

commercial package description and availability

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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY MIL	PDIP	SOIC	SSOP	LITERATURE REFERENCE
SN74LS86A	14	Quad 2-Input Exclusive-OR Gate	✔	✔	✔		SDLS124
SN74LS90	14	Decade Counter	✔	✔	✔		Call
SN74LS92	14	Divide-By-12 Counter	✔	✔	✔		Call
SN74LS93	14	4-Bit Binary Counter	✔	✔	✔		Call
SN74LS107A	14	Dual J-K Flip-Flop	✔	✔	✔		SDLS036
SN74LS109A	16	Dual J-$\overline{K}$ Flip-Flop	✔	✔	✔		SDLS037
SN74LS112A	16	Dual J-K Negative-Edge-Triggered Flip-Flop	✔	✔	✔		SDLS011
SN74LS122	14	One-Shot Multivibrator	✔	✔	✔		SDLS043
SN74LS123	16	Dual Monostable Multivibrator	✔	✔	✔		SDLS043
SN74LS125A	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔		SDLS044
SN74LS126A	14	Quad Bus Buffer Gate (OE)	✔	✔	✔		SDLS044
SN74LS132	14	Quad 2-Input Positive-NAND With Schmitt Trigger	✔	✔	✔		SDLS047
SN74LS136	14	Quad Exclusive-OR Gate With Open-Collector Outputs	✔	✔	✔		SDLS048
SN74LS137	16	3-to-8 Decoder/Demultiplexer With Address Latch	✔	✔	✔		SDLS132
SN74LS138	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔		SDLS014
SN74LS139A	16	Dual 2-to-4 Decoder/Demultiplexer	✔	✔	✔		SDLS013
SN74LS145	16	BCD-to-Decimal Decoder/Driver	✔	✔	✔		SDLS051
SN74LS148	16	8-to-3-Line Priority Encoder	✔	✔	✔		Call
SN74LS151	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔		SDLS054
SN74LS153	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		SDLS055
SN74LS155A	16	Dual 1-to-4 Decoder	✔	✔	✔		SDLS057
SN74LS156	16	Dual 2-to-4-Line Decoder/Demultiplexer With Open-Collector Outputs	✔	✔	✔		SDLS057
SN74LS157	16	Quad 1-of-2 Data Selector/Multiplexer	✔	✔	✔		SDLS058
SN74LS158	16	Quad 1-of-2 Data Selector/Multiplexer	✔	✔	✔		SDLS058
SN74LS161A	16	4-Bit Synchronous Binary Counter	✔	✔	✔		SDLS060
SN74LS163A	16	4-Bit Synchronous Binary Counter	✔	✔	✔		SDLS060
SN74LS164	14	8-Bit Parallel-Out Serial Shift Register	✔	✔	✔		SDLS061
SN74LS165A	16	8-Bit Parallel-Load Shift Register	✔	✔	✔		Call
SN74LS166A	16	8-Bit Parallel-Load Shift Register	✔	✔	✔		SDLS063
SN74LS169B	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔		SDLS134
SN74LS173A	16	4-Bit D-Type Latch	✔	✔	✔		SDLS067

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

LS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74LS174	16	Hex D-Type Flip-Flop	✔	✔	✔		SDLS068
SN74LS175	16	Quad D-Type Flip-Flop	✔	✔	✔		SDLS068
SN74LS191	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔		SDLS072
SN74LS193	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔	✔		SDLS074
SN74LS194A	16	4-Bit Bidirectional Universal Shift Register	✔	✔	✔		SDLS075
SN74LS195A	16	4-Bit Bidirectional Universal Shift Register	✔	✔	✔		SDLS076
SN74LS221	16	Dual Monostable Multivibrator	✔	✔	✔		SDLS213
SN74LS240	20	Octal Buffer/Driver	✔	✔	✔		SDLS144
SN74LS241	20	Octal Buffer/Driver	✔	✔	✔		SDLS144
SN74LS243	14	Quad Bus Transceiver	✔	✔	✔		SDLS145
SN74LS244	20	Octal Buffer/Driver	✔	✔	✔		SDLS144
SN74LS245	20	Octal Bus Transceiver	✔	✔	✔	✔	SDLS146A
SN74LS247	16	BCD-to-7-Segment Decoder	✔	✔	✔		SDLS083
SN74LS251	16	1-of-8 Data Selector/Multiplexer	✔	✔	✔		SDLS085
SN74LS253	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔		SDLS147
SN74LS257B	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDLS148
SN74LS258B	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SDLS148
SN74LS259B	16	8-Bit Addressable Latch	✔	✔	✔		SDLS086
SN74LS266	14	Quad 2-Input Exclusive-NOR Gate	✔	✔	✔		SDLS151
SN74LS273	20	Octal D-Type Flip-Flop	✔	✔	✔		SDLS090
SN74LS279A	16	Quad Set/Reset Latch	✔	✔	✔		SDLS093
SN74LS280	14	9-Bit Parity Generator/Checker	✔	✔	✔		SDLS152
SN74LS283	16	4-Bit Binary Full Adder	✔	✔	✔		SDLS095
SN74LS292	16	31-Bit Programmable Counter		✔			SDLS153
SN74LS294	16	16-Bit Programmable Counter		✔			SDLS153
SN74LS297	16	Digital Phase-Lock Loop		✔			SDLS155
SN74LS298	16	Quad 2-Input Multiplexer With Storage	✔	✔	✔		SDLS098
SN74LS299	20	8-Bit Universal Shift/Storage Register	✔	✔	✔		SDLS156
SN74LS321	16	Crystal-Controlled Oscillator		✔			Call
SN74LS323	20	8-Bit Universal Shift/Storage Register	✔	✔	✔		SDLS160
SN74LS348	16	8-to-3-Line Encoder	✔	✔	✔		SDLS161

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule

✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74LS365A	16	Hex Buffer/Driver	✔	✔	✔		SDLS102
SN74LS367A	16	Hex Buffer/Driver	✔	✔	✔		SDLS102
SN74LS368A	16	Hex Buffer/Driver	✔	✔	✔		SDLS102
SN74LS373	20	Octal D-Type Transparent Latch	✔	✔	✔		SDLS165
SN74LS374	20	Octal D-Type Flip-Flop	✔	✔	✔		SDLS165
SN74LS375	16	4-Bit Bistable Latch	✔	✔	✔		SDLS166
SN74LS377	20	Octal D-Type Flip-Flop With Clock Enable	✔	✔	✔		SDLS167
SN74LS378	16	Hex D-Type Flip-Flop With Clock Enable	✔	✔	✔		SDLS167
SN74LS379	16	Quad D-Type Flip-Flop With Clock Enable	✔	✔	✔		SDLS167
SN74LS382	20	4-Bit Arithmetic Logic Unit		✔			Call
SN74LS390	16	Dual 4-Bit Decade Counter	✔	✔	✔		SDLS107
SN74LS393	14	Dual 4-Bit Binary Counter	✔	✔	✔		SDLS107
SN74LS396	16	Octal Storage Register	✔	✔			SDLS173
SN74LS399	16	Quad 2-Input Multiplexer	✔	✔	✔		SDLS174
SN74LS423	16	Retriggerable Multivibrator	✔	✔	✔		SDLS175
SN74LS442	20	Bus Transceiver		✔	✔		SDLS176
SN74LS465	20	Octal Buffer/Driver		✔	✔		SDLS179
SN74LS466	20	Bus Transceiver		✔	✔		SDLS179
SN74LS540	20	Octal Buffer/Driver	✔	✔	✔		SDLS180
SN74LS541	20	Octal Buffer/Driver	✔	✔	✔		SDLS180
SN74LS590	16	8-Bit Binary Counter With 3-State Output Register	✔	✔	✔		SDLS003
SN74LS592	16	Binary Counter With Input Register	✔	✔	✔		SDLS004
SN74LS593	20	8-Bit Binary Counter With 3-State I/O Register	✔	✔	✔		SDLS004
SN74LS594	16	8-Bit Shift Register With Output Register		✔	✔		SDLS005
SN74LS595	16	8-Bit Shift Register With 3-State Output Register	✔	✔	✔		SDLS006
SN74LS596	16	Octal Shift Register		✔			SDLS006
SN74LS597	16	Shift Register With Input Latch	✔	✔	✔		SDLS007
SN74LS598	20	Shift Register With Input Latch	✔	✔	✔		SDLS007
SN74LS599	16	Shift Register With Output Latch		✔	✔		SDLS005
SN74LS623	20	Octal Bus Transceiver		✔	✔		SDLS185
SN74LS624	14	Voltage-Controlled Oscillator	✔	✔	✔		SDLS186

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE SELECTION GUIDE

LS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY				LITERATURE REFERENCE
			MIL	PDIP	SOIC	SSOP	
SN74LS628	14	Voltage-Controlled Oscillator	✔	✔	✔		SDLS186
SN74LS629	16	Voltage-Controlled Oscillator	✔	✔	✔		SDLS186
SN74LS640	20	Octal Bus Transceiver	✔	✔	✔		SDLS189
SN74LS640-1	20	Octal Bus Transceiver		✔	✔		SDLS189
SN74LS641	20	Octal Bus Transceiver With Open-Collector Outputs	✔	✔	✔		SDLS189
SN74LS641-1	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDLS189
SN74LS642	20	Octal Bus Transceiver With Open-Collector Outputs	✔	✔	✔		SDLS189
SN74LS642-1	20	Octal Bus Transceiver With Open-Collector Outputs		✔	✔		SDLS189
SN74LS645	20	Octal Bus Transceiver	✔	✔	✔		SDLS189
SN74LS646	24	Octal Registered Bus Transceiver		✔	✔		SDLS190
SN74LS647	24	Octal Registered Bus Transceiver		✔	✔		SDLS190
SN74LS648	24	Octal Registered Bus Transceiver		✔	✔		SDLS190
SN74LS652	24	Octal Registered Bus Transceiver		✔	✔		SDLS191
SN74LS669	16	4-Bit Up/Down Counter	✔	✔	✔		SDLS192
SN74LS670	16	4-By-4 Register File	✔	✔	✔		SDLS193
SN74LS673	24	16-Bit Shift Register	✔	✔	✔		SDLS195
SN74LS674	24	16-Bit Shift Register	✔	✔	✔		SDLS195
SN74LS682	20	8-Bit Magnitude Comparator	✔	✔	✔		SDLS008
SN74LS684	20	8-Bit Magnitude Comparator	✔	✔	✔		SDLS008
SN74LS686	24	Octal Magnitude/Identity Comparator		✔	✔		SDLS008
SN74LS688	20	8-Bit Identity Comparator	✔	✔	✔		SDLS008
SN74LS697	20	Synchronous Up/Down Binary Counter	✔	✔	✔		SDLS199

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

LV
Low-Voltage CMOS Technology

TI's LV CMOS technology products are specially designed parts for 3-V power supply use. The entire LV family also has been recharacterized to operate at 5 V.

The LV family is a 2-μ CMOS process that provides up to 8 mA of drive and propagation delays of 18 ns maximum, while having a static power consumption of only 20 μA for both bus-interface and gate functions.

The LV family is offered in the octal footprints with all of the advanced packaging such as small-outline integrated circuit (SOIC), shrink small-outline package (SSOP), and thin shrink small-outline package (TSSOP).

For LV data sheets, see the 1996 *Low-Voltage Logic Data Book*, literature number SCBD003B, or the 1996 *AHC/AHCT, HC/HCT, and LV CMOS Logic Data Book*, literature number SCLD004.

DEVICE SELECTION GUIDE

LV

DEVICE	NO. PINS	FUNCTION	AVAILABILITY SOIC	SSOP	TSSOP	LITERATURE REFERENCE
SN74LV00	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	SCLS182C
SN74LV02	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔	SCLS183B
SN74LV04	14	Hex Inverter	✔	✔	✔	SCLS184C
SN74LVU04	14	Hex Inverter	✔	✔	✔	SCLS185B
SN74LV08	14	Quad 2-Input Positive-AND Gate	✔	✔	✔	SCLS186C
SN74LV14	14	Hex Inverter With Schmitt Trigger	✔	✔	✔	SCLS187B
SN74LV32	14	Quad 2-Input Positive-OR Gate	✔	✔	✔	SCLS188C
SN74LV74	14	Dual D-Type Flip-Flop	✔	✔	✔	SCLS189C
SN74LV125	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔	SCES003B
SN74LV138	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔	SCLS190D
SN74LV164	14	8-Bit Parallel-Out Serial Shift Register	✔		✔	SCLS191B
SN74LV165	16	8-Bit Parallel-Load Shift Register	✔	✔	✔	SCES007B
SN74LV174	16	Hex D-Type Flip-Flop With Clear	✔	✔	✔	SCLS192B
SN74LV240	20	Octal Buffer/Driver	✔	✔	✔	SCLS193B
SN74LV244	20	Octal Buffer/Driver	✔	✔	✔	SCLS194C
SN74LV245	20	Octal Bus Transceiver	✔	✔	✔	SCLS075E
SN74LV273	20	Octal D-Type Flip-Flop With Clear	✔	✔	✔	SCLS195B
SN74LV373	20	Octal D-Type Transparent Latch	✔	✔	✔	SCLS196C
SN74LV374	20	Octal D-Type Flip-Flop	✔	✔	✔	SCLS197B
SN74LV573	20	Octal D-Type Transparent Latch	✔	✔	✔	SCLS198B
SN74LV574	20	Octal D-Type Flip-Flop	✔	✔	✔	SCLS199B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

LVC
Low-Voltage CMOS Technology

TI's LVC logic products are specially designed for 3-V power supplies.

The LVC family is a high-performance version with 0.8-μ CMOS process technology, 24-mA current drive, and 6.5-ns maximum propagation delays for driver operations. The LVC family includes both bus-interface and gate functions with 50 different functions planned.

The LVC family is offered in the octal and Widebus™ footprints with all of the advanced packaging such as small-outline integrated circuit (SOIC), shrink small-outline package (SSOP), and thin shrink small-outline package (TSSOP) with planned thin very small-outline (TVSOP) additions.

All LVC devices are available with 5-V tolerant inputs and outputs.

For LVC data sheets, see the 1996 *Low-Voltage Logic Data Book*, literature number SCBD003B.

DEVICE SELECTION GUIDE

LVC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY SOIC	SSOP	TSSOP	TVSOP	LITERATURE REFERENCE
SN74LVC00A	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔		SCAS279C
SN74LVC02A	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔		SCAS280C
SN74LVC04A	14	Hex Inverter	✔	✔	✔		SCAS281C
SN74LVCU04A	14	Hex Inverter	✔	✔	✔		SCAS282C
SN74LVC08A	14	Quad 2-Input Positive-AND Gate	✔	✔	✔		SCAS283C
SN74LVC10A	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔		SCAS284C
SN74LVC14A	14	Hex Inverter With Schmitt Trigger	✔	✔	✔		SCAS285C
SN74LVC32A	14	Quad 2-Input Positive-OR Gate	✔	✔	✔		SCAS286C
SN74LVC74A	14	Dual Positive-Edge-Triggered D-Type Flip-Flop	✔	✔	✔		SCAS287C
SN74LVC86A	14	Quad 2-Input Exclusive-OR Gate	✔	✔	✔		SCAS288C
SN74LVC112A	16	Dual Negative-Edge-Triggered JK Flip-Flop	✔	✔	✔	✔	SCAS289C
SN74LVC125A	14	Quad Bus Buffer Gate ($\overline{OE}$)	✔	✔	✔		SCAS290C
SN74LVC126A	14	Quad Bus Buffer Gate (OE)	✔	✔	✔	✔	SCAS339C
SN74LVC137A	16	3-to-8 Decoder/Demultiplexer With Address Latches	+	+	+		SCAS340B
SN74LVC138A	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔		SCAS291D
SN74LVC139A	16	Dual 2-to-4 Decoder/Demultiplexer	+	+	+		SCAS341B
SN74LVC157A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SCAS292C
SN74LVC158A	16	Quad 2-to-1 Data Selector/Multiplexer	+	+	+		SCAS342C
SN74LVC240A	20	Octal Buffer/Driver	+	+	+		SCAS293B
SN74LVC241A	20	Octal Buffer/Driver	+	+	+		SCAS343B
SN74LVC244A	20	Octal Buffer/Driver	✔	✔	✔	+	SCAS414D
SN74LVCH244A	20	Octal Buffer/Driver With Bus Hold	✔	✔	✔	+	SCES009A
SN74LVC245A	20	Octal Bus Transceiver	✔	✔	✔	+	SCAS218E
SN74LVCH245A	20	Octal Bus Transceiver With Bus Hold	✔	✔	✔	+	SCES008A
SN74LVC257A	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔		SCAS294C
SN74LVC258A	16	Quad 2-to-1 Data Selector/Multiplexer	+	+	+		SCAS345C
SN74LVC373A	20	Octal D-Type Transparent Latch	✔	✔	✔		SCAS295D
SN74LVC374A	20	Octal D-Type Flip-Flop	✔	✔	✔		SCAS296D
SN74LVC540A	20	Octal Buffer/Driver	+	+	+		SCAS297C
SN74LVC541A	20	Octal Buffer/Driver	+	+	+		SCAS298C
SN74LVC543A	24	Octal Registered Bus Transceiver	+	+	+		SCAS299B

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY SOIC	SSOP	TSSOP	TVSOP	LITERATURE REFERENCE
SN74LVC544A	24	Octal Registered Transceiver	+	+	+		SCAS346B
SN74LVC573A	20	Octal D-Type Transparent Latch	✔	✔	✔		SCAS300B
SN74LVC574A	20	Octal D-Type Flip-Flop	✔	✔	✔		SCAS301A
SN74LVC646A	24	Octal Registered Bus Transceiver	+	+	+		SCAS302B
SN74LVC652A	24	Octal Registered Bus Transceiver	+	+	+		SCAS303B
SN74LVC821A	24	10-Bit Bus-Interface Flip-Flop	+	+	+		SCAS304B
SN74LVC823A	24	9-Bit Bus-Interface Flip-Flop	+	+	+	+	SCAS305B
SN74LVC827A	24	10-Bit Buffer/ Driver	+	+	+	+	SCAS306C
SN74LVC828A	24	10-Bit Buffer/ Driver	+	+	+	+	SCAS347B
SN74LVC841A	24	10-Bit Bus-Interface D-Type Latch	+	+	+	+	SCAS307C
SN74LVC843A	24	9-Bit Bus-Interface D-Type Latch	+	+	+		SCAS308B
SN74LVC861A	24	10-Bit Bus Transceiver	+	+	+	+	SCAS309B
SN74LVC863A	24	9-Bit Bus Transceiver	+	+	+	+	SCAS310B
SN74LVC2244A	20	Octal Buffer/Driver With Series-Damping Resistors	✔	✔	✔		SCAS572A
SN74LVCR2245	20	Octal Buffer/Driver With Series-Damping Resistors	+	+	+		SCAS581
SN74LVC2952A	24	Octal Registered Bus Transceiver	+	+	+		SCAS311B
SN74LVCC3245	24	Octal Level-Shifting Transceiver	+	+	+		SCAS585
SN74LVC4245	24	Octal Bus Transceiver and 3.3-V to 5-V Shifter	+	+	+		SCAS375B
SN74LVCC4245	24	Octal Level-Shifting Transceiver	+	+	+		SCAS584
SN74LVCH16240A	48	16-Bit Buffer/Driver With Bus Hold		✔	✔	+	SCAS566B
SN74LVCH16241A	48	16-Bit Buffer/Driver With Bus Hold		+	+		SCAS348B
SN74LVC16244A	48	16-Bit Buffer/Driver		✔	✔	+	SCES061B
SN74LVCH16244A	48	16-Bit Buffer/Driver With Bus Hold		✔	✔		SCAS313C
SN74LVC16245A	48	16-Bit Bus Transceiver		✔	✔	+	SCES062B
SN74LVCH16245A	48	16-Bit Bus Transceiver With Bus Hold		✔	✔	✔	SCES063B
SN74LVCH16373A	48	16-Bit Transparent D-Type Latch With Bus Hold		✔	✔	+	SCAS568B
SN74LVCH16374A	48	16-Bit Edge-Triggered D-Type Flip-Flop With Bus Hold		✔	✔	+	SCAS565B
SN74LVCH16540A	48	16-Bit Buffer/ Driver With Bus Hold		✔	✔	+	SCAS569B
SN74LVCH16541A	48	16-Bit Buffer/ Driver With Bus Hold		✔	✔	+	SCAS567B
SN74LVCH16543A	56	16-Bit Registered Bus Transceiver With Bus Hold		+	+	+	SCAS317B
SN74LVCH16646A	56	16-Bit Registered Bus Transceiver With Bus Hold		+	+	+	SCAS318C

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE SELECTION GUIDE

LVC

DEVICE	NO. PINS	FUNCTION	AVAILABILITY SOIC	SSOP	TSSOP	TVSOP	LITERATURE REFERENCE
SN74LVCH16652A	56	16-Bit Registered Bus Transceiver With Bus Hold		+	+	+	SCAS319C
SN74LVC16952A	56	16-Bit Registered Bus Transceiver		+	+	+	SCAS320B
SN74LVC161284	48	17-Bit IEEE P1284 Driver/Receiver		+	+	+	SCAS583
SN74LVCH162244A	48	16-Bit Buffer/Driver With Series-Damping Resistors and Bus Hold		+	+	+	SCAS545A
SN74LVCHR162245A	48	16-Bit Bus Transceiver With Series-Damping Resistors and Bus Hold		+	+		SCAS582

commercial package description and availability

PDIP (plastic dual-in-line package)
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PQ = 100/132 pins

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DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
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PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

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PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
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MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

LVT
Low-Voltage BiCMOS Technology

The specially designed 3-V LVT family uses the latest 0.8-μ BiCMOS-process technology for bus-interface functions. Like its 5-V ABT counterpart, LVT can provide up to 64 mA of drive, 4-ns propagation delays, and in addition, consumes less than 100 μA of standby power. The inputs have the bus-hold feature to eliminate external pullup resistors and I/Os that can handle up to 7 V, which allows them to act as 5-V/3-V translators.

LVTZ devices offer all the features found in TI's standard LVT family. In addition, LVTZ incorporates circuitry to protect the devices in live-insertion applications. The device goes to the high-impedance state during power up and power down, which is called powered-up 3 state (PU3S).

The LVT family is offered in the octal and Widebus™ footprints with all of the advanced packaging such as small-outline integrated circuit (SOIC), shrink small-outline package (SSOP), and thin shrink small-outline package (TSSOP).

For LVT data sheets, see the 1996 *Low-Voltage Logic Data Book*, literature number SCBD003B.

DEVICE SELECTION GUIDE

LVT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY					LITERATURE REFERENCE
			MIL	SOIC	SSOP	TSSOP	TVSOP	
SN74LVT125	14	Quad Bus Buffer Gate ($\overline{OE}$)		✔	✔	✔		SCBS133D
SN74LVT240	20	Octal Buffer/Driver		✔	✔	✔		SCBS134G
SN74LVT241	20	Octal Buffer/Driver		✔	✔	✔		SCBS352
SN74LVT244A	20	Octal Buffer/Driver	✔	✔	✔	✔		SCAS354C
SN74LVTH245A	20	Octal Bus Transceiver	✔	✔	✔	✔		SCBS130K
SN74LVTR2245	20	Octal Bus Transceiver		+	+	+		Call
SN74LVT273	20	Octal D-Type Flip-Flop With Clear		✔	✔	✔		SCBS136F
SN74LVTH540	20	Octal Buffer/Driver		+	+	+		Call
SN74LVTH541	20	Octal Buffer/Driver		+	+	+		Call
SN74LVT543	24	Octal Registered Bus Transceiver		✔	✔	✔		SCBS137D
SN74LVT573	20	Octal D-Type Transparent Latch	✔	✔	✔	✔		SCBS138D
SN74LVT574	20	Octal D-Type Flip-Flop	✔	✔	✔	✔		SCBS139D
SN74LVT646	24	Octal Registered Bus Transceiver	✔	✔	✔	✔		SCBS140D
SN74LVT652	24	Octal Registered Bus Transceiver		✔	✔	✔		SCBS141E
SN74LVT2952	24	Octal Registered Bus Transceiver		✔	✔	✔		SCBS152E
SN74LVTH16244A	48	16-Bit Buffer/Driver			✔	✔		SCBS142H
SN74LVTH16245A	48	16-Bit Bus Transceiver			✔	✔		SCBS143G
SN74LVTH16373	48	16-Bit D-Type Transparent Latch			✔	✔		SCBS144G
SN74LVTH16374	48	16-Bit D-Type Flip-Flop			✔	✔		SCBS145G
SN74LVT16500	56	18-Bit Universal Bus Transceiver			✔	✔		SCBS146D
SN74LVT16501	56	18-Bit Universal Bus Transceiver			✔	✔		SCBS147G
SN74LVT16543	56	16-Bit Registered Transceiver			✔	✔		SCBS148C
SN74LVT16646	56	16-Bit Registered Bus Transceiver			✔	✔		SCBS149C
SN74LVT16835	56	18-Bit Buffer/Driver			✔	✔		SCBS309D
SN74LVT16952	56	16-Bit Registered Bus Transceiver	✔		✔	✔		SCBS151D
SN74LVT162244	48	16-Bit Buffer/Driver With Series Resistors	✔		✔	✔		SCBS258F
SN74LVTH162244	48	16-Bit Buffer/Driver With Series Resistors			✔	✔		SCBS258F
SN74LVT162245	48	16-Bit Bus Transceiver With Series Resistors			✔	✔		SCBS260E
SN74LVTH162245	48	16-Bit Bus Transceiver With Series Resistors	+		✔	✔		Call
SN74LVTH162373	48	16-Bit D-Type Transparent Latch With Series Resistors			✔	✔		SCBS261E
SN74LVTH162374	48	16-Bit D-Type Flip-Flop With Series Resistors			✔	✔		SCBS262D

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

LVT

DEVICE	NO. PINS	FUNCTION	AVAILABILITY MIL	SOIC	SSOP	TSSOP	TVSOP	LITERATURE REFERENCE
SN74LVTZ240	20	Octal Buffer/Driver		✔	✔	✔		SCBS301B
SN74LVTZ244	20	Octal Buffer/Driver		✔	✔	✔		SCBS302C
SN74LVTZ245	20	Octal Bus Transceiver		✔	✔	✔		SCBS303C

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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SOIC (small-outline integrated circuit)
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SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
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DBV = 5 pins

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TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
\+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

S
Schottky Logic

While the overall demand for S products is declining, there remains significant interest in the marketplace for many of these functions. TI will continue to supply S products as long as there is an appropriate level of market demand for them.

The S family is not recommended for new designs.

For S data sheets, contact the Product Information Center at (972) 644-5580.

DEVICE SELECTION GUIDE

S

DEVICE	NO. PINS	FUNCTION	AVAILABILITY MIL	PDIP	SOIC	LITERATURE REFERENCE
SN74S00	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	SDLS025
SN74S02	14	Quad 2-Input Positive-NOR Gate	✔	✔	✔	SDLS027
SN74S04	14	Hex Inverter	✔	✔	✔	SDLS029
SN74S05	14	Hex Inverter With Open-Collector Outputs	✔	✔	✔	SDLS030
SN74S08	14	Quad 2-Input Positive-AND Gate	✔	✔	✔	SDLS033
SN74S09	14	Quad 2-Input Positive-AND Gate With Open-Collector Outputs	✔	✔	✔	SDLS034
SN74S10	14	Triple 3-Input Positive-NAND Gate	✔	✔	✔	SDLS035
SN74S11	14	Triple 3-Input Positive-AND Gate	✔	✔	✔	SDLS131
SN74S20	14	Dual 4-Input Positive-NAND Gate	✔	✔	✔	SDLS079
SN74S30	14	8-Input Positive-NAND Gate	✔	✔	✔	SDLS099
SN74S32	14	Quad 2-Input Positive-OR Gate	✔	✔	✔	SDLS100
SN74S37	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	SDLS103
SN74S38	14	Quad 2-Input NAND Gate With Open-Collector Outputs	✔	✔	✔	SDLS105
SN74S51	14	Dual 2-Input and Dual 3-Input AND/OR Gate	✔	✔	✔	SDLS113
SN74S74	14	Dual D-Type Flip-Flop	✔	✔	✔	SDLS119
SN74S85	14	4-Bit Magnitude Comparator	✔	✔	✔	SDLS123
SN74S112A	16	Dual J-K Negative-Edge-Triggered Flip-Flop	✔	✔	✔	SDLS011
SN74S124	16	Dual Voltage-Controlled Oscillator	✔	✔	✔	SDLS201
SN74S132	14	Quad 2-Input Positive-NAND Schmitt Trigger	✔	✔	✔	SDLS047
SN74S133	16	13-Input NAND Gate	✔	✔	✔	SDLS202
SN74S138A	16	3-to-8 Decoder/Demultiplexer	✔	✔	✔	SDLS014
SN74S139A	16	Dual 2-to-4 Decoder/Demultiplexer	✔	✔	✔	SDLS013
SN74S140	14	Dual 50-Ω Line Driver	✔	✔	✔	SDLS210
SN74S151	16	8-to-1 Data Selector/Multiplexer	✔	✔	✔	SDLS054
SN74S153	16	Dual 4-to-1 Data Selector/Multiplexer	✔	✔	✔	SDLS055
SN74S157	16	Quad 1-of-2 Data Selector/Multiplexer	✔	✔	✔	SDLS058
SN74S158	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔	SDLS058
SN74S163	16	4-Bit Synchronous Binary Counter	✔	✔	✔	SDLS060
SN74S169	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔		SDLS134
SN74S174	16	Hex D-Type Flip-Flop	✔	✔		SDLS068
SN74S175	16	Quad D-Type Flip-Flop	✔	✔	✔	SDLS068

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
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SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

schedule
✔ = Now
+ = Planned

MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	PDIP	SOIC	
SN74S194	16	4-Bit Bidirectional Universal Shift Register	✔	✔		SDLS075
SN74S195	16	4-Bit Bidirectional Universal Shift Register	✔	✔	✔	SDLS076
SN74S240	20	Octal Buffer/Driver	✔	✔	✔	SDLS144
SN74S241	20	Octal Buffer/Driver	✔	✔	✔	SDLS144
SN74S244	20	Octal Buffer/Driver	✔	✔	✔	SDLS144
SN74S251	16	1-of-8 Data Selector/Multiplexer	✔	✔	✔	SDLS085
SN74S257	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔	✔	SDLS148
SN74S260	14	Dual 5-Input Positive-NOR Gate	✔	✔	✔	SDLS208
SN74S280	14	9-Bit Parity Generator/Checker	✔	✔	✔	SDLS152
SN74S283	16	4-Bit Binary Full Adder	✔	✔		SDLS095
SN74S299	20	8-Bit Universal Shift Register	✔	✔	✔	SDLS156
SN74S373	20	Octal D-Type Transparent Latch	✔	✔	✔	SDLS165
SN74S374	20	Octal D-Type Flip-Flop	✔	✔	✔	SDLS165
SN74S381	20	Arithmetic Logic Unit	✔	✔		SDLS168

commercial package description and availability

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MIL – refer to page 4–1 for military package description and availability

TEXAS INSTRUMENTS

TTL
Transistor-Transistor Logic

While the overall demand for TTL products is declining, there remains significant interest in the marketplace for many of these functions. TI will continue to supply TTL products as long as there is an appropriate level of market demand for them.

With the exception of the SN7406 and SN7407, the TTL family is not recommended for new designs.

For TTL data sheets, contact the Product Information Center at (972) 644-5580.

DEVICE SELECTION GUIDE

TTL

DEVICE	NO. PINS	FUNCTION	AVAILABILITY			LITERATURE REFERENCE
			MIL	PDIP	SOIC	
SN7400	14	Quad 2-Input Positive-NAND Gate	✔	✔	✔	SDLS025
SN7404	14	Hex Inverter	✔	✔		SDLS029
SN7405	14	Hex Inverter With Open-Collector Outputs	✔	✔	✔	SDLS030
SN7406	14	Hex Inverter With Open-Collector Outputs	✔	✔	✔	SDLS031
SN7407	14	Hex Buffer With Open-Collector Outputs	✔	✔	✔	SDLS032
SN7414	14	Hex Inverter With Schmitt Trigger	✔	✔	✔	SDLS049
SN7416	14	Hex Inverter/Driver	✔	✔	✔	SDLS031
SN7417	14	Hex Buffer/Driver With Open-Collector Outputs	✔	✔	✔	SDLS032
SN7430	14	8-Input Positive-NAND Gate	✔	✔		SDLS099
SN7432	14	Quad 2-Input OR Gate	✔	✔		SDLS100
SN7437	14	Quad 2-Input Positive-NAND Gate	✔	✔		SDLS103
SN7438	14	Quad 2-Input Positive-NAND Gate With Open-Collector Outputs	✔	✔	✔	SDLS105
SN7445	16	BCD-to-Decimal Decoder/Driver	✔	✔		SDLS110
SN7447A	16	BCD 7-Segment Decoder/Driver	✔	✔		SDLS111
SN7474	14	Dual D-Type Flip-Flop	✔	✔	✔	SDLS119
SN7497	16	Binary Rate Multiplier	✔	✔		SDLS130
SN74121	14	One-Shot Multivibrator	✔	✔	✔	SDLS042
SN74123	16	Dual Monostable Multivibrator	✔	✔		SDLS043
SN74128	14	50-Ω Line Driver	✔	✔	✔	SDLS045
SN74132	14	Quad 2-Input Positive-NAND With Schmitt Trigger	✔	✔		SDLS047
SN74145	16	BCD-to-Decimal Decoder/Driver	✔	✔		SDLS051
SN74148	16	8-to-3-Line Priority Encoder	✔	✔		SDLS053
SN74150	24	Data Selector/Multiplexer	✔	✔		SDLS054
SN74154	24	4-to-16-Line Decoder/Demultiplexer	✔	✔	✔	SDLS056
SN74156	16	Dual 2-to-4-Line Decoder/Demultiplexer With Open-Collector Outputs	✔	✔		SDLS057
SN74157	16	Quad 2-to-1 Data Selector/Multiplexer	✔	✔		SDLS058
SN74159	24	4-to-16-Line Decoder/Demultiplexer	✔	✔		SDLS059
SN74175	16	Quad D-Type Flip-Flop	✔	✔		SDLS068
SN74193	16	4-Bit Synchronous Up/Down Binary Counter	✔	✔		SDLS074
SN74276	20	Quad J-K Flip-Flop		✔	✔	SDLS091
SN74367A	16	Hex Buffer/Driver	✔	✔		SDLS102

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
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NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability

DEVICE	NO. PINS	FUNCTION	AVAILABILITY MIL	PDIP	SOIC	LITERATURE REFERENCE
SN74368A	16	Hex Buffer/Driver	✔	✔		SDLS102
SN74376	16	Quad J-K Flip-Flop	✔	✔		SDLS104

commercial package description and availability

PDIP (plastic dual-in-line package)
N = 14/16/20 pins
NT = 24/28 pins
NP = 28 pins

PLCC (plastic leaded chip carrier)
FN = 20/28/44/52/68/84 pins

schedule
✔ = Now
\+ = Planned

QFP (plastic quad flat package)
RC = 52 pins
PH = 80 pins
PQ = 100/132 pins

SOIC (small-outline integrated circuit)
D = 8/14/16 pins
DW = 16/20/24/28 pins

SSOP (shrink small-outline package)
DB = 14/16/20/24/28/30/38 pins
DL = 28/48/56 pins

SOT (small-outline transistor)
DBV = 5 pins

TQFP (plastic thin quad flat package)
PAH = 52 pins
PAG = 64 pins
PM = 64 pins
PN = 80 pins
PCA, PZ = 100 pins
PCB = 120 pins

TSSOP (thin shrink small-outline package)
PW = 8/14/16/20/24/28 pins
DGG = 48/56/64 pins

TVSOP (thin very small-outline package)
DGV = 14/16/20/24/48/56 pins
DBB = 80/100 pins

MIL – refer to page 4–1 for military package description and availability